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BULLETIN

—OF THE—

Brooklyn Entomological SOCIETY.

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BROOKLYN, N. Y.

MAY 1878. —— APRIL 1879.

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BULLETIN

—OF THE—

Brooklyn Entomological Society.

BROOKLYN MAY 1878. No. 1.

In the year 1872 the Brooklyn Entomological Society was first organized, with only five members. This number has been constantly increasing, so that at the present date the success of the Society is assured. In the mean time it has acquired a large cabinet containing insects of the several orders, notably Coleoptera, and Lepidoptera, and a valuable collection of publications on Entomology, including some rare old works.

Since the first day of its organization, the Society has held its regular monthly meetings (on the first saturday of every month,) and these have on many occasions been of great interest. The members of the Society have long felt the necessity of having some channel for giving publicity to the many matters of interest which constantly occur at its meetings, and have at last concluded to issue a monthly Bulletin.

The contents of the Bulletin will be:

1. Useful hints for practical collecting, exact time and locality, food-plants, approved ways for setting traps, etc.
2. Report on the results of raising beetles in captivity, on their larval state, time of duration etc.
3. Notes on raising butterflies.
4. A list of new descriptions of N. A. Coleoptera & Lepidoptera also of the alteration in the nomenclature.
5. The 3d sheet of this publication is devoted to synoptic tables alternatively on Coleoptera, and Lepidoptera; it may be preserved separately and will form in due time a complete illustrated Catalogue of these orders of Insects.
6. The last pages are reserved for offers to exchange and advertisements of interest to Entomologists.

To partly defray the expenses of publication, the Bulletin will be issued at the low price of 50 cts. per annum payable in advance.

RAISING BEETLES IN CAPTIVITY.

Animals of all orders are raised now a days in captivity, from the most minute to the largest, even of those classes that require a large space for breeding, such as lions and elephants.

In the field of Entomology the lepidopterist knows the greater part of the larva of his pets, while the coleopterist is acquainted with but very few.

Why is this so ? Is it because it is so very difficult to rear them or is it because there have been so few workers in this department of Natural History.

Such thoughts agitated my mind two years ago, and I collected a number of our common Cicindelas viz. vulgaris, repanda, 12 guttata and hirticollis. I made for them a box (2 x 1½ x 1 foot) of wood, glass and woven wire such as used for wire screens, and filled it ½ foot deep with sand making here and there a few miniature hills and in the middle of the box a valley, in which I placed a flat tin pan filled with water. At the two sides I placed pieces of green turf to represent a meadow.

I fed the Cicindelas with different soft larva, small Chrysomelidæ (Crioceris asparagi & Diabrotica) etc. and kept them alive over two months. They copulated, dug holes in the sand, were running around during sunshine very lively till July 1., when I left for the country. After setting free the captive cicindelas, I could not detect any live thing in the box, but I did not consider my experiment a failure.

During the last winter, I as well as several other members of our Society made preparations for raising Insects from the egg more extensively. For this purpose we use boxes of zinc, the two longer sides and the cover of glass, the two smaller sides of wire-screen, and we are very much pleased with them. I already succeeded in obtaining larvæ from Cucujus clavipes. I feed the imagines and the larvæ with sugarwater, with which I soak small thin pieces of wood. The imagines were collected Jan. 15th. 1878.

I also have in breeding cages, Carabus limbatus, Cychrus Lecontei, Galerita janus, Chlaenius aestivus, several Platyni, Cicindela 12 guttata, etc.

Cychrus are fed on snails (Patula alternata Say) but they also very readily feed on soft larvæ of woodborers; Carabus, Chlaenius and Galerita are fed with veal, and it is very interesting to look at the 12 Carabus limbatus, (6 males & 6 female) while devouring the meat, tearing and lifting it, all standing around it like the members of a poultry yard around a trough.

Of Cychrus Lecontei I have 2 males and 1 female, and I saw them while feeding on a larva drive each other away from their prey. This was also seen by Mr. H. K. Morrison, when he lately paid me a visit. Besides the collecting I do not know of anything that gives more pleasure than to closely watch these little creatures, and I hope others will be induced to devote some of their time to this very interesting part of Entomology. It would afford me great pleasure, to receive any communications on this matter. Schaupp.

LARVA OF DICAELUS DILATATUS.

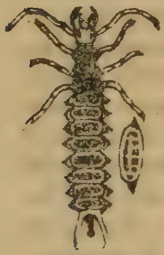

Fig. 1.

Aug. 1. 1877 I found two larvae under a board in the wood and visited them every day until Aug 6 when one of them was transformed into a pupa. I left it three days in the wood, then took it home, and put it into a bottle half filled with dry earth, wetting it daily with 3 or 4 drops of water. Aug. 12. it was transformed into Dicaelus dilatatus. It remained two days white, the 3d day it became brown, and the legs and abdomen began to blacken; Aug. 15 it was all black. I fed the imago with flies, deprived of wings and in one instance it ate a large pupa of a Lepidoptera devouring in ten minutes its whole contents.

The larvae — see fig. 1 — is about 25 mm long; head red, thorax black, ventral segments yellowish white, each with a longitudinal black spot above, and beneath with 7 spots arranged as in fig. 1.a; the sides of each segment are also black, distinctly pointed. The anus is prolonged, downwards, and the last segment is prolonged into two slender appendages. Schaupp.

see Horn Description of the larva of the N. A. Cicindelidae also of Dicaelus etc. Trans. Am. Ent. Soc. VII. 1878. pag. 37.

SOME NOTES ON ARCTIA FIGURATA DRU.

In the early part of May 1877 I took at Brentwood L. I. a crippled female of Arctia figurata of which I succeeded in getting 25 eggs. In about two weeks most of these hatched and they fed readily on common dandelion. Altogether I had 15 larvae of which [July 5th] 13 were feeding. Of these the two first went underground July 8th and all of the rest but one soon followed. This one hibernated in larval state, spun up at the beginning of April 1878. The full grown larva is jet black, hairs very stiff, and the movement of the caterpillar is very sluggish at this period, while in its earlier stages it is very lively. When touched it rolls itself up the same as most of the other arctians.

On July 22 th four of the imagines made their appearance, all males, but what was my surprise to find instead of their secondaries being red (as were those of the parent moth) two were such, and the other two of a bright yellow.

Altogether I got out 11 specimens of which 8 were males, and 3 females. Of the males the secondaries of four were red (same as the parent moth) while those of the other four were orange yellow.

Each of the three females was of a different form. The secondaries of one were the usual red, the other had yellow secondaries, while those of the third were black, with only a small orange yellow mark of the shape of a V. In all the specimens I raised, the markings of the primaries showed hardly any variation. From this it would seem that but little reliance can be placed (as regards specific distinction) on the colors, and markings of the secondaries among the Arctians, while the primaries on the contrary seem to be constant. As an illustration of this take Arctia virgo, of which I have seen specimens with their secondaries of a bright yellow.

Judging by the figure in Stretch's Zygaenidae and Bombycidae of N. A. (pl. 9 fig. 6) A. anna Gr. seems to be a black var. of A. Saundersii or A. persephone; in fact the inconstancy of the color and markings of the secondaries once demonstrated the question arises,are not A. Saundersii, A. persephone and A. anna one and the same species?

A. phalerata we find similarly variable although I have my doubts whether we have not two distinct species labelled under this name. I would advise collectors when capturing the female of A. phalerata, or of any other species to try rearing from the egg, taking great care to keep the brood separate. By defining the different forms (if any) of the specimens derived from one and the same female we arrive at some positive proofs as to what constitutes a species, and this is itself of far more value than hosts of descriptions of new species from the imago only.

Arctians, as a rule are general feeders, and can be easily raised on common garden weeds, the radish and lettuce. E. L. Graef.

Cerura Multiscripta, Riley. — Larvae found on the upright Willow July 30th; a male imago emerged on August 30th and a female on Sept. 8th. F. Tepper.

Synoptic table of the genus **OMOPHRON** Latr.

Mesosternum covered, scutellum wanting. Body round convex.

Dr. Horn Monogr. Trans. Am. Ent. Soc. III. 71 classifies them as follows:

Group 1. —Species broadly oval, shining, elytral striae almost entirely effaced at apex, and indistinct at the sides, median thoracic line scarcely evident.

Dark or nearly black, lateral margin of the thorax and elytra pale, the punctures of the striae become effaced at the middle also towards the sides **1. labiatum**

Brilliantly green with narrow pale border. The striae are less deep, the punctures large and more distant, and extending fully $\frac{2}{3}$ the distance from base to apex. The punctures forming the lateral striae well defined. **2. nitidum**

Group 2. — Species less broadly oval, less convex and less shining, elytral striae attaining (very nearly) the apex. lateral striae as distinct as the discal.

Elytra, 14-striate.
Striae deep, finely and closely punctured. **3. gilae**
Striae moderate, punctures rather distant and obliterated at apex. **4. obliteratum**
Striae faint, punctures large, distant **5. robustum**
Elytra, 15-striate.
Broadly oval
Punctures of elytral striae obliterated at apex. **6. dentatum**
Punctures distinct at apex.
Lateral margin only, of thorax, pale. **7. americanum**
Lateral, basal and apical margins pale. **8. tesselatum**
Elongate oval.
Elytral striae not deeply impressed, finely and closely punctured flat interspaces. **9. ovale.**

Dark species are Nos. 1. 2. 4. 7. 9; lighter Nos. 3. 5. 6. 8.

1. Labiatum. Fab. Syst. E. I. 248. Length, 6mm. Rare in the Middle, more common in the Southern States.
2. nitidum. Lec. An. Lyc. IV. 347. - nitens Chand. Length, 5-6mm. Ill. Ks. Ind. Terr. La. Tex.
3. gilae. Lec. An. Lyc. V. 201. Length, 7mm. Arizona.
4. obliteratum. Horn, Trans. Am. Ent. Soc. III. 73. Length, 7mm. Arizona.
5. robustum. Horn, Trans. Am. Ent. Soc. III. 74. Length, 6.5mm. N. Scotia.
6. dentatum. Lec. An. Lyc. V. 200. Length, 7mm. Arizona.
7. americanum. Dej. Spec. V. 583. Length, 6-7mm, Can. East, Middle and Western States.
8. tesselatum. Say, Journ. Ac. III. 52. Length, 6-7mm. Can. Middle States.
9. ovale. Horn, Trans. Am. Ent. Soc. III. 75. Length, 6.5mm. Cal.

The species are found in wet sand, near brooks, rivers or ponds, under stones, chippings or in holes between the roots of plants. By pouring water over the banks, they are driven out and try to save themselves on the higher parts of the banks, and are so easily captured. Sp.

Synoptic table of the genus **ELAPHRUS** Latr.

Crotch. Syn. table. Trans. Am. Ent. Soc. V. 246.

Bronzed and metallic; eyes large and prominent, the elytra with rows of large, shallow round foveae,

Anterior tarsi of male with four dilated joints; thorax sparingly punctate.

Elytra smooth impunctate.

Thorax beneath coarsely and sparsely punctate. **1. Clairvillei**

Thorax beneath finely and more densely punctate.

Legs piceous ... **2. Laevigatus**

Legs pale **3. Olivaceus**

Elytra and thorax sparsely and coarsely punctate **4. Cicatricosus**

Elytra and thorax sparsely and lightly punctate, foveae feebly impressed. **5. Obliteratus**

Elytra punctate at sides, disc smooth. Thorax evidently punctate. **6. Fuliginosus**

Anterior tarsi of male with 3 joints dilated. Thorax and elytra very closely and finely punctate.

Thorax finely and closely punctate, beneath.

Thorax broad, transverse, abruptly coarctate **7. Lecontei**

Thorax cordate **8. Riparius**

Thorax broad, sides subangulate; beneath at the sides rather sparsely punctured; intervals smooth; color above brilliantly green; elytra without ocellate foveae **9. Viridis**

Thorax, beneath, sparsely, not deeply punctured; thorax narrow, legs entirely pale. **10. Pallipes**

Thorax coarsely punctate beneath, shining **11. Ruscarius**

1. Clairvillei, Kirby - (politus Lec. Agass. Lake Sup. 209.) Fauna bor. IV. 63, Length 8 mm. Can. N. Y.
2. laevigatus, Lec. An. Lyc. V. 200 Length, 7. 5 - 8. 5mm. Mich. Brit. Col.
3. olivaceus, Lec. n. sp. I. 1. Length 6.5 mm. N. Y. Catskills.
4. cicatricosus, Lec. An. Lyc. IV. 348. Length 7 mm. Can.
5. obliteratus, Mann. Bull. Mosc. III. 117.–? *Obscurior kirby -small- length* 9. 5 *Alas.*
6. fuliginosus, Say. Am. Phil. IV. 414. — Clairvillei Lec. Length 8mm. Wisc. N. Y. Nebr.
7. Lecontei, Crotch - intermedius. Lec. An. Lyc. IV. 448. Length 7mm Utah.
8. riparius Lin, Faun. Luec. Nr 749. - intermedius. Kirb. - *Californicus Man.- gratiosus Man. - similis Lec. - punctatissimus Lec.* Length 7mm Cal. Alaska, Europe
9. viridis. Horn, Trans. Am. Ent. Soc. VII. 52 (1878) Length 5.5mm. Calif.
10. pallipes, Horn. Trans. Am. Ent. Soc. VII. 51 (1878) Length 6mm. Or. Bri. Col.
11. ruscarius, Say. Trans. Am. Phil. IV. 417. Length 6mm. East, Middle & West.

The species of this genus resemble Cicindela in form and Bembidium in habits, they are found running on mudflats near streams or pools, during sunshine and hiding under plants at other times. *Sp.*

GORTYNA NEBRIS. *Guén.* var. G. nitela *Guén.*

From the fact that the larvae of these two ? species are found together in the stem of the same plant (wild parsnip) at the same time, and that the chrysalids of each disclose at the same time (October and beginning of November) I regard them only as varieties of one and the same species.

Since making this observation I have had in copulation G. nebris m. with G. nitela f. and also G. nebris f. with G. nitela m. although there were at the time unoccupied of both forms in the same breeding cage.

Both species are remarkably alike, and are only distinguishable by the presence of the bright yellow spots on the primaries of nebris. In a closely allied species Hydroecia nictitans we have almost the same variation and we can not attach much importance to this fact. The synonymy reads therefore;

GORTYNA NEBRIS *Guén.* **var. G. NITELA,** *Guén.*

Edw. Graef.

IN COLLECTING SILPHIDAE instead of trusting to the occasional finding of carrion, I invest a few cents at the butchers for a couple pounds of poor meat, chop it up and place it under stones, small boards etc. The first days I find there Carabidae (Carabus, Pterostichus, Platynus) and then Necrophori, Silphae, and Staphilinidae. I think this way makes the collecting of such specimens far less disgusting and unpleasant.

Schaupp.

When the cherries on the trees become rotten, swarms of Elateridae come at dusk flying from all sides toward them. I captured several species : Asaphes memnonius, Melanotus communis, Cupes concolor etc.

A good way to collect coprophagus coleoptera

(Hister, Aphodius etc. also Staphilinidae) is to shovel the dung of cows, horses, sheep, etc. into a pail of water, * the dung sinks and in a few moments the insects living in it, come up clean and nice and are easily captured, while swimming around in the water.

The working with a pail of water is easily done especially when living on a farm for a time, simply by carrying half a pail full of water around in the pasture.

* *If there is a slowly running brook near, shovel the dung into it.*

D. S. YEOMAN.

AINSLIE STR. COR. OF NINTH STR.
BROOKLYN, E. D. N. Y.

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- lemniscata *Lec.*
- nevadica *Lec.*
- striga *Lec.*

Nomaretus, debilis *Lec.*
- fissicollis *Lec.*
- bilobus *Say*

Cychrus, unicolor *Oliv.*
- violaceus *Lec.*
- Ridingsii *Bl.*
- tuberculatus *Harr.*
- angulatus *Harr.*
- rugiceps *Horn.*
- dessolatus *Schaum.*
- obliquus *Lec.*
- cordata *Lec.*
- subtilis *Schaum.*

BULLETIN

OF THE

Brooklyn Entomological Society.

BROOKLYN JUNE 1878. No. 2.

ON SOME SPECIES OF NOCTUIDAE COMMON TO NORTH AMERICA AND EUROPE.

AGROTIS OBELISCA *H. Sch.*
" OBELISCOIDES *Guen.*
" SEXATILIS *Grote.*

Of Agrotis obeliscoides (sexatilis) I took a number of specimens in Sullivan Co. N. Y. and found two forms, differing from each other only in one (sexatilis) having the interior margins of its primaries more conspicuously powdered with light gray.

The other form is the same as the European obelisca. Lederer in (Noctuinen Europa's pag. 221) states: " like A. tritici and A. aquilina, which undergo all shades of coloration from dull brownish gray and undistinctly marked specimens to violet brown and distinctly marked with and without the lighter dotted (powdered) margin, - so also varies A. obelisca." — A. sexatilis is the variety of obeliscoides with the interior margins of its anteriors powdered with light gray - obeliscoides is like obelisca, consequently they are one and the same species.

HADENA BASILINEA *Linn.*
" FINITIMA *Grote.*

My specimens of H. finitima are identical with H. basilinea of Europe. I at first supposed the reddish brown patch in the middle of the anteriors of finitima was constant but I have now specimens with out this distinguishing mark, otherwise the two species are alike.

CHARICLEA UMBRA *Hufn.*
PYRRHIA EXPRIMENS *Walk.*

On comparing specimens of C. umbra received from Europe with P. exprimens I could find no difference in coloration or marking. The European specimens were somewhat smaller.

CALOCAMPA SOLODAGINIS *Hub.*
" GERMANA *Morr.*
LITHOMIA " *Grote.*

Specimens of C. germana received last year from Albany N. Y. proved identical with C. solodaginis of Europe. I am inclined to the opinion that this is an imported species. It has been known but a short time, although it is quite common now in Albany. It is not likely that this species would have escaped the attention of such industrious collectors as Mess. Meske, Lintner and Hill until the last few years, if it were a native and to the manor born.

That a number of species of coleoptera and lepidoptera are brought to our shores from foreign countries through the channels of commerce is certain. A friend of mine who imported willows from Germany and France told me, he often found strange beetles and moths in his loft where the willows were stored. This was in the busy part of New York where no vegetation was near to afford sustenance to any native species.

XYLINA INGRICA *H. Sch.*
" PEXATA *Grote.*

On comparing X. pexata with the European X. ingrica I find them to be identical.

There is no doubt when our Lepidopterists become better acquainted with the European Noctuidae we will find a great number of species which are common to both continents and are known here under different specific and generic names.

Edw. L. Graef.

— ——— – – – – ——— —

Larva of **Notodonta Stragula,** *Grote*, found at Greenwood N. Y. on Poplar July 4th - ☿ imago emerged on July 27.

F. Tepper.

——— – – – ———

We present herewith a part of a paper on **Cicindelidae,** read before the Society by *F. G. Schaupp* at the Meeting March 2. 1878.

Our next number will contain a Synopsis of the **Papilionidae** by *F. Tepper.*

AMBLYCHILA, Say.

(Greek: amblys—obtuse, and cheilos—labrum.)

A. cylindriformis, Say, (tab. 1, fig. 1.)—Black, elytra brown; head large, eyes small; labial palpi shorter than maxillary, with the first joint concealed under the mentum, the third and fourth elongate; mandibles with 3 teeth; labrum bidentate at middle; thorax and underside smooth; elytra oval with three carinæ at each side and irregular, unequal punctures; legs long and robust; tarsi short. Wingless.

Length 35 – 38 mm.

♂.—Hind trochanters acute with two grooves; dense yellow brushes near the two tibial spurs of the middle legs; last ventral segment broadly rounded with large setigerous punctures on each side of the middle; pygidium small.

♀.—Hind trochanters shorter, oval, obtuse at tip; last ventral segment somewhat prominent in middle, and sinuate at each side, with a feeble median longitudinal impression; pygidium very large.

The larva, (tab. 1, fig. 13,) has been recently fully described by Dr. G. H. Horn, Trans. Am. Ent. Soc. vii, p. 29.—It is yellowish-white, head and thorax scute castaneous, differs by the number of eyes (but two) and the length of the joints of antennæ and palpi from the larvæ of Omus, Tetracha and Cicindela.

Antennæ with joint two nearly equal to all the others combined; maxillary palpi with the first joint longest, third shortest.

Length 32 mm, in normal position; 44.5 mm. when extended.

Since the time of its description by Say, (1823) this insect has been very rare, but during the last two years it has been found quite abundantly in Kansas by Messrs. H. A. Brous, Prof. F. H. Snow, and by my friend George T. Cooper, who has kindly sent me specimens.

It lives in holes made in the clayey banks of ravines, is nocturnal in its habits, and moves around in a peculiar way, raising its body very high and keeping its antennæ in constant motion. Its sight is very poor.

Habitat.—Western Kansas, Colorado, Arkansas, Indian Territory, N. M., and Eastern Arizona, Texas. June, July, August.

Say, Journ. Ac. Phil., iii, p. 139; Trans. Am. Phil., new ser., iv, 409, emend.; Thoms., Mon. p. 14, table 3, fig. 3.—Lec. Col. of Kans., p. 1, table 2, fig. 1; Horn, Trans. Am. Ent. Soc., v, 233, (on sexual characters, etc); Trans. Am. Ent. Soc., vii, 28 on the larva.

Amblychila Piccolominii, Reiche, Ann. Fr. 1839, p. 560, table 19, fig. 1–6; is merely a smoother A. cylindriformis, and although said by Reiche to come from California, it is not from that State. In describing *Pasimachus californicus*, Chaudoir says: "*C'est le même voyageur qui a rapporté l'Amblychila Piccolominii,*" etc. Now it is well-known that P. californicus is not a Californian insect, and the occurrence of this and the Amblychila together show conclusively that they were taken where these two species may occur together, namely, in Northern Texas.

OMUS, Esch.

(Omos—Cruel.)

Black, more or less opaque (1 submetallic), wingless, head nearly square, eyes small, palpi of equal length, the labial with the first joint very short, third long; antennæ inserted in front under a prolongation before the eyes; mandibles very long, acute, at the right side with two teeth, on the left with three; thorax somewhat flattened; elytra convex; legs stout, short.

♂.—Has the three joints of anterior tarsi dilated (more inwards) and densely spongy beneath; last ventral segment deeply emarginate at the middle.

♀.—Has the last ventral segment oval at tip and entire.

The larva, (tab. 1, fig. 14,) described by Dr. Horn, l. c., p. 31, is yellowish-white; head piceous; prothorax scute pale castaneous; has eight eyes, two pairs large, two pairs small; antennæ with the first three joints equal, fourth shorter; maxillary palpi with joints one and three equal, second shorter. Length in normal flexed position, 20 mm.

This genus is also nocturnal, found on the Pacific Slope from Vancouver Island to Monterey Co., California. They hide under pieces of wood and may easily be baited by placing finely chopped meat near small pieces of board, under which they can be found the next day.

Horn, Trans. Am. Ent. Soc., v. 234, (on sexual characters); Trans. Am. Ent. Soc., vii, 31, (description of the larva of Omus Dejeanii); Hy. Edwards, Psyche, i, 73, (on the localities and habits of Omus).

TABLE OF OMUS.

I.—Lateral margin of the thorax obliterated posteriorly, not attaining the basal margin.
Surface black.
Thoracic margin distinctly reflexed.
Elytra foveolate and opaque......................... **Dejeanii.**
Elytra simply punctate and shining................ **Edwardsii.**
Thoracic margin extremely feeble.
Elytra rather irregularly punctate.................. **Audouinii.**
Surface bronzed.
Elytra broadest near the apex, form nearly parallel... **submetallicus.**
II.—Lateral margin of the thorax attaining the basal margin.
Elytra moderately coarsely punctured.
Thorax nearly square.................................... **Hornii.**
Thorax narrowed behind, rugulose .... **californicus.**
Thorax narrowed behind, comparatively smooth.
Form robust, labrum bisinuate.................. **sequoiarum.**
Form slender, labrum nearly truncate................ **Lecontei.**
Entire surface smooth, impunctured................................ **lævis.**

This table has been prepared from notes furnished by Dr. Horn.

1. **O. Dejeanii,** Reiche, (tab. 1, fig. 2.)—Our largest species, easily distinguished by the deep irregular foveæ of the elytra. Length 15—20 mm.

Habitat.—Vancouver Island, Northern California, Oregon and Montana. April to July.

Reiche, Ann. Fr., 1833, p. 299, tab. 10, fig. 1; Thoms. Mon., p. 15, tab. 3, fig. 4; Leconte, P. R. R. Exp., 47 Par., p. 27, fig.; H. Edwards, Psyche, i, p. 73.

2. **O. Edwardsii,** Crotch, (tab. 1, fig. 3)—Resembles Dejeanii, but is without the foveæ, much smoother. Length 14—18 mm.

Habitat.—Lake Tahoe, Cal. June, August.

Crotch, Trans. Am. Ent. Soc., v, p. 73; H. Edwards, l. c.

3. **O. Audouinii,** Reiche, (tab. 1, fig. 4)—The thorax less deeply wrinkled, the disc and apical margin nearly smooth, and the punctures of the elytra more unequal. Length 13—18 mm.

Habitat.—Foot-hills and mountains of California, Oregon, Washington Territory and Vanc. Island. June to August.

Reiche, Ann. Fr., 1838, p. 300, tab. 10, fig. 2; Thoms. Mon., figs. 7, 8; Lec., P. R. R. Exp., p. 27; H. Edwards, l. c.

4. **O. submetallicus,** Horn, (tab. 1, fig. 5.)—A species very distinct by its bronze color, its more elongate and cylindrical form, and the shape of the elytra. Length 13.5 mm.

Habitat.—Eldorado Co., Cal. June.

Horn, Trans. Am. Ent. Soc., 1872, p.; Hy. Edwards, l. c.

5. **O. Hornii,** Lec., (tab. 1, fig. 6.)—Has the thorax less narrowed behind than any other species, elytra rather broadly ovate, much rounded at the sides. Length 16.5 mm.

Habitat.—Yosemite, Cal.

Lec., Trans. Am. Ent. Soc., v, p. 157; Hy. Edwards, l. c.

6. **O. californicus,** Eschh, (tab. 1, fig. 7.)—Has the thorax very deeply rugose, which looks therefore more opaque, and may by this character be easily distinguished. Length 14—16 mm.

Habitat.—California, west of Sierra Nevada, southwards to Monterey Co. Found near San Francisco by Hy. Edwards. April to May.

Eschh., Atl. i, p. 4, tab. 4, fig. 1; Thoms., l. c., p. 16, table 3, figs. 5, 6; Lacordaire, Gen. Atl. i, tab. 1, fig. 1; Lec., P. R. R., p. 27; Hy. Edwards, l. c.

7. **O. sequoiarum,** Crotch, (tab. 1, fig. 8.)—Closely allied to californicus, but longer, broader and stouter; sides of thorax more rounded; elytra broader and more convex. Length, 18 mm.

Habitat.—Sierra Nevada near Calaveras, Cal. June to August.

Crotch, Trans. Am. Ent. Soc., v, p. 73.

8. **O. Lecontei,** Horn, (tab. 1, fig. 9.)—Easily known by the form of the elytra, having the greatest width in front of the middle, and behind this point becoming gradually narrower and less arcuate. Length 16 mm.

Habitat.—Near Monterey, also Mariposa, Cal. June, July.

Horn, Trans. Am. Ent. Soc., iv, p. 143.

9. **O. lævis,** Horn, (tab. 1, fig. 10.)—Differs from all the others of the genus in being almost entirely smooth and sub-opaque; the elytra are regularly oval, exhibiting a few almost obsolete punctures irregularly placed like the foveæ in *Dejeanii.* The whole surface is very finely alutaceous, causing the sub-opaque appearance. Length 17 mm.

Habitat.—High Sierras near the head waters of King's and Tule Rivers. June.

Horn, Proc. Ac. Nat. Soc., 1866, p. 394.

TETRACHA, Hope.

(Quadrifariam.)

Large, metallic green species which are winged but do not fly.

Head large, eyes circular, large; labial palpi longer than maxillary, with the first joint elongated; third joint of maxillary longer than the fourth; mandibles with four teeth; labrum without tooth; thorax broader than long; elytra subparallel, slightly convex, broader than the base of the thorax, deeply punctulate; scutellum not visible; a large triangular impression at the middle of the thorax.

♂.—Anterior tarsi dilated as in Omus; last ventral segment triangularly emarginate; tip of elytra subtruncate; sutural angle rectangular.

♀.—Last ventral segment broadly oval at tip; tip of each elytron rounded; sutural angle obliterated.

The larva, table 1, fig. 15, also described by Dr. Horn, l. c., p. 34, is yellowish-white; head and thorax corneous with metallic surface; the margin of the latter testaceous; has the eyes as in Omus. Antennæ with second joint longer than the first and equal to the two following together. Maxillary palpi with the second and third joints nearly equal, each slightly longer than the first. Length 17 mm.

This genus is represented in the United States by two species, which are also nocturnal in their habits. They hide during daytime under chips, and are found from Philadelphia southward in every Atlantic and Gulf State.

Tetracha carolina, Lin., table 1, fig. 11.—Light gold-green, tip of abdomen, apical lunule of the elytra, legs and antennæ luteous; thorax smooth; elytra coarsely punctured, at the middle purple and at the margin bright green. Length 20 mm.

Habitat.—Georgia, Louisiana, Florida, Texas and Lower California.

Lin., Syst. nat., ii, 1735, p. 657; Dej., Spec. i, p. 8; Thomson, l. c. p. 30; Horn, Trans. Am. Ent. Soc., v, p. 234, (sex. char.) About a dozen varieties of this species are described from Mexico, Cuba, Brazil, Chili, Peru.

Tetracha virginica, Lin., table 1, fig. 12.—Dark gold-green; last ventral segment and antennæ ferugineous; thorax smooth; elytra much coarser punctured than T. carolina; broad lateral margin of thorax and elytra metallic-green, middle black: without lunule. Length 20—24 mm.

Habitat.—With the preceding, Texas, Louisiana, Florida, Nebraska, Pennsylvania.

Lin., Syst. T. ii, 1735, p. 657; Thoms., l. c., p. 41, tab. 7, fig. 7; Syn. virginata, Lin. Syst., (Gmelin) T. iv, p. 1922; Horn, Trans. Am. Ent. Soc., v, p. 234, (sexual characters).

An excellent trap for small Silphidae, Catops, Colon, etc. is made by putting a rabbits foot or any similar object in an ale bottle and burying it up to the mouth in earth. These small nocturnal species will in the pursuit of the odorgiving food fall into the bottle, from which they cannot escape.

Leconte.

This note, just communicated to us by Dr. Leconte is very welcome, as these little Silphidae always were scarce and very poorly represented in most collections.

On the sandy banks of the Delaware and its tributary the Callicoon River I collected large numbers of *Omophron* [72 and 73 Crotch's list] *Dyschirius* [224. 227] *Clivina* [261] *Schizogenius* [276] *Platynus*, *Tachys* [1127. 1129. 1145. 1148. 1156] *Bembidium* [1026. 1029a. 1034, 1035. 1036. 1037. 1042. 1057. 1090. 1095. 1096. 1110. 1116.] *Heterocerus* and other small species, by pouring water over the small holes in the sand and on the plants growing at the edge of the water. Very often I saw them running out of their retreats by the hundreds.

In this way during one hour one may secure a large quantity. Clivina and Dyschirius are in the holes in the sand, Omophron and Heterocerus under the plants, the rest are found under the small stones on the banks.

Schaupp.

COLEOPTEROUS LARVAE OF TENEBRIONIDAE IN GENERAL.

In studying the larval states of *Tenebrionidae* we find that there is scarcely a coleopterous family whose members are homologically so closely allied and correlatively alike, that I venture to say they are all retraceable to scarcely three typical larval forms.

The first type comprises that of *Tenebrio* [Tenebrionellus *Cr.*] — having homogenous corneous segments of cylindrical string-shape, the stigmata are situated under the overlapping tergal fold [in what *Lacaze Duthiers* calls the Pleurites] .

The second type comprises that of *Boletophagus* & *Boletotherus* - a more compact form with only the prothoracic segment corneous and abdominal segments slightly arcuate. The dorsal segments do not overlap, forming a marginal bead [wulst] , above which [on the tergal part of the segment] the abdominal stigmata are situated.

The third type comprises that of *Pentaphyllus*. Clypeus not entirely separated, mandibles more strongly dentate, terminal joint of labial palpi large and truncate, pygidium without penicilli.

Giesler.

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BULLETIN

—OF THE—

Brooklyn Entomological Society.

BROOKLYN, JULY 1878. No. 3.

PRACTICAL HINTS ON COLLECTING COLEOPTERA.

BY H. SCHMELTER.

How do you capture beetles? is a question so often addressed to a collector, that I do not think it out of place to discuss it at length in our Bulletin. The beginner who is not so fortunate as to be in position to profit by the experience of an older collector, will surely find some points of interest, and the latter will, I hope, be induced by it, to communicate his individual observations on the habits and hiding-places of coleoptera.

The proper choice of a locality for collecting is a point of first importance It is true that insects are found everywhere, but like all the rest of the animal world their existence is more or less dependent on water.

Scarcity of water in a region is synonymous with scarcity of insect life, and the collector can save much time and be spared much discouraging experience by a knowledge of this fact.

Beetles are to be found at all seasons of the year. Many species hibernate in mature form, hidden under loose bark, or under moss at the foot of trees, under the dried leaves which cover the ground, or in the earth, under stones, etc. An excellent mode of capturing beetles of smaller size is the sifting of mouldering leaves, which is equally remunerative at all times. The leaves should be taken from hollows in the ground, where they form thick layers, and especially from places near the borders of woods.

The sieve I use consists of a wire ring of about one foot in diameter, to which a bag of coarse muslin of about the same length is sewed, the bottom of which is formed of a piece of brass wire-cloth of about 10 inches diameter, and with about 5 mm. square spaces. The sifting could be done over a sheet of white muslin or paper, or better, by placing the sieve into a bag of 1½ feet length fastened to a ring equal to that of the sieve. The sifted matter will fall into the outer bag, and can be examined whenever convenient. In this manner I have captured many interesting species: *Staphilinidae*, *Trichopterygidae*, *Pselaphidae*, *Lathridiidae*, *Nitidulidae*, which by no other means would have come under observation. The best time for this kind of collecting is in winter, when no snow is on the ground, and late in fall, but may also be employed at any time of the year with good results. On warm pleasant days towards the close of winter (end of February and March), searching under stones will prove very successful, as the insects which have passed the winter in torpid state in the earth under stones, will now come to the surface. Good places are the sides of hills sloping towards the East. An excellent locality in this neighbourhood is the chain of hills on the right bank of the Hudson River (the first slopes of the Pallisades), in the rear of Jersey City and Hoboken. The foot of these hills, which are bordered by swamps, is especially rich in insect life at this season, and nearly every stone which is upturned discloses a little colony of them. This is the only locality about New York where *Oodes fluvialis Lec.*, *americanus Dej.*, *amaroides Dej.*, *Diplochila laticollis Lec.* and *Chlaenius niger Rand* are found, not to mention the multitudes of other *Carabidae*, *Staphilinidae*, *Hydrophilidae etc.* which there abound. But later in spring these places are entirely deserted.

(To be continued.)

ON COLEOPTEROUS LARVAE OF THE FAMILY TENEBRIONIDAE.

During the months of May and June 1877 numerous live specimens of Tenebrionidae were sent to me by mail from Monterey Co., California. They comprised several species of the genera *Asida* and *Eleodes*, the former of which died after a few weeks, but the latter I have still caged (May 1878). In October I noticed the first eggs in the cage of Eleodes gigantea. The chorion of the egg is a structureless elastic membrane, its color milk-white and its form oval elongate.

Length: 0. 8 mm. breadth: 0. 35 mm. To find out the medium in which to incubate them was a matter of great difficulty, since, when kept dry, they dried and shrunk, or when kept damp, they were destroyed by a mould.

November 20th 1877 I noticed the first larvae. After about 10th of December 1877 no more larvae appeared even under the most favorable circumstances. The few individuals thus obtained devoured each other* or gradually died before they reached the length of a few millimeters.

* I often noticed that larvae of Tenebrio obscurus eat their chrysalids.

Of the nine pairs of stigmata the first is situated near the anterior margin of the mesothoracic fold, the other eight pairs are on the pleurites [see Bulletin No. 2 page 11] of the first eight abdominal segments. Ventral part of ninth segment consists of two slightly protruding fleshy propellers.

Larval State of Eleodes Gigantea.

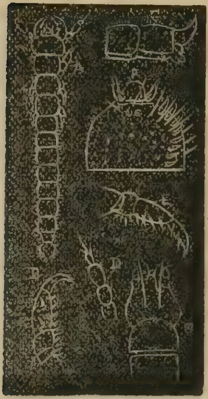

Fig. 4.

Head convex above, gular region concave; all the mouth-parts like Tenebrio; antennae differing by the stouter 2d and 3d joint. Legs, thoracal and abdominal segments with no perceptible difference. Pygidium with 18 lateral penicilli and terminal obtuse tip, sparsely fimbriate. Color of small individuals (6 mm.) entirely white. No trace of ocelli or even dark pigment spots on the ophthalmic region. The small larvae from which the drawing is made have the abdominal segment nearly all flat, gradually after several exuviations acquiring the typical string or wire-shape and also darker color. The penicilli are a direct prolongation from the hypoderm, piercing the chitinized cuticula.

Fig .4. A, **Larva** of Eleodes gigantea. **E**, anterior leg, **C**, gula, mentum, ligula and labial palpi, **D**, antenna. **B**, middle and posterior leg. **F**, pygidium, acetic ac. prep., powerfully magnified, left side omitted. **G**, three last segments (lateral view), anus, pygidium and propellers.

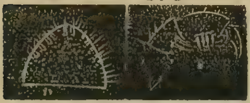

Fig. 5.

Fig. 5. A. pygidium of Eleodes dentipes [7 mm. long larva], magnified; about 4 weeks old. *b*, anterior leg, magnified. Coxa and trochanter each with two blunt teeth, trochanter with two penicilli near tip, and femur with four penicillia at middle. Simple claw with rudimentary median fissure at tip and one penicillus at middle.

Larval State of Eleod. Dentipes.

Head and mouth-parts, antennae, middle and posterior legs alike as in *El. gigantea*. It differs by the pygidium having but ten penicilli, the two terminal are slightly longer and run parallel over terminal tip; and also by the form of the anterior leg.

It is remarkable to state that larvæ of but a few hours age have two small blunt terminal penicilli. at the side of which are two stout long bristles, but without lateral penicilli. The latter will appear after the first moult. Length 2-5 mm.

A number of Eleodes dentipes began to deposit their eggs in April, 78 and the larvæ have now the length of 30 to 35 mm. I keep them in a breeding jar with earth and decayed wood.

CARL F. GISSLER.

Cychrus feed on snails, I collected several C. viduus which were just feeding on a very flat species of snail (*Patula alternata Say*), having the head and a great part of the thorax concealed in the shell. That induced me to collect those species of snails, which live under rotten stumps and logs, and I placed them under pieces of board in numbers, and was always paid for my trouble. But as the snails sometimes moved away. I bored a small hole in the shell near its mouth and fastened them with a pin under the boards. Some years I captured in this way 15 and more Cychrus (viduus, Lecontei and canad).

SCHAUPP

The Red Maple trees (*Acer rubrum, Mœnch*) in Dayton, Ohio, were greatly infested by *Trochilium acerni Clemens*, in consequence a large number of those shade trees are dead or dying.

G. R. PILATE.

By placing tared ropes around the trunks of the infested trees, by protecting the insectivorous birds or by introducing the sparrow, the ravages of such insects may be prevented.

C FUCHS

The best collecting ground I discovered is a little wood, about 10 acres, near North Branch, Sullivan Co. N. Y. I have visited this locality for the last six years and have found there many rare and valuable species, among which were Cychrus viduus and canadensis, Calathus impunctatus x, Platynus angustatus x. Pterost. rostratus, adoxus and honestus, Myas coracinus, Dicælus dilatatus x, Phymaphora pulchella, Mycetina perpulchra x. Mycotretus pulcher, Clinidium conjugens x, Dorcus parallelus, Ceruchus piceus, Osmoderma eremicola, Cupes capitata and concolor, Limonius aurifer, Tragosoma Harrisii, Bellamira scalaris, Leptura canadensis x, erythroptera and subhamata, Toxonotus Schaumii, Phellopsis obcordata x, Bolitotherus bifurcus x, Bolitophagus corticola x, and depressus, Pomphopea Sayi, Capnochroa fuliginosa x, Androchirus fucipes, etc. etc.

At the nearest Station of the Erie R. R. Callicoon, I found Cicindela marginipennis, Patrobus rugicollis and many Bembidium. etc.

My friend Schmelter and myself prepared a list of the species found there numbering nearly 600, which will be published later in the Bulletin.

Several members of our Society Mess. E. Groh, H. Schmelter, E. Graef, F. Tepper, J. Mayer who spent their vacation there, were well pleased with the results of their collectings.

---

*- *I shall be very happy to meet any collector there during the present summer July 5th-Sept. 1st. The Postmaster in Callicoon will furnish my direction.*

SCHAUPP

SYNOPTIC TABLE OF THE GENUS PAPILIO, LIN.

Head large; eyes prominent; palpi very short, joints scarcely distinct; antennæ elongate, club pyriform; body more or less hairy, free from the wings; wings robust, borders more or less dentated, generally terminated by one or more tails.

The Papilios of North America may be divided into two groups:

*I. with tails—type Turnus, Linn.
*II. without tails—type Polydamas, Linn.
Group *I may be divided in:

A.—Ground color of wings yellow with black markings.

1. **P. Turnus**, *Linn.* bright yellow with black borders and markings; ☿ with large blue lunules on the secondaries, expands 3 to 4 inches.—U. S., East of the Rocky Mountains. Black ☿ variety *Glaucus. Linn.* more common in the Southern States.

2. **P. Rutulus**, *B'dv.* General appearance of P. Turnus, but usually smaller. May be distinguished by its having the yellow band which runs along the posterior margin on the underside of the primaries unbroken, while in Turnus it is disconnected.—Pacific States.

3. **P. Eurymedon**, *B'dv.* Pale yellow; black markings heavier; size same as Rutulus.—California to British Columbia.

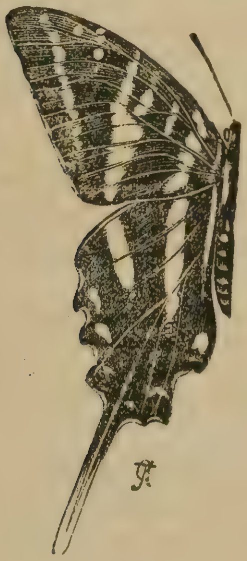

FIG. 6.

4. **P. Daunus**, *B'dv.* Bright yellow; black markings and border slighter than in Turnus; double tailed; size same, or larger than Turnus.—Arizona to Montana, Oregon.

5. **P. Pilumnus**, *B'dv.* Very close to the above, but somewhat smaller, and the black markings heavier. Three tailed.—Arizona, New Mexico.

6. **P. Ajax**, *Linn.* Pale yellow, with black border and markings; anal spot red and double, expands two, to two and one-half inches.—Southern States.

Var: *Marcellus*, *B'dv.* Slightly larger than the above and more heavily marked; tails longer; anal spot red, single.—Southern States.

7. **P. Zolicaon**, *B'dv.* Bright yellow; black border with yellow lunules; interior margin wide and black; veins prominently black; anal spot red, expands two and one-half inches.—Pacific States.

B.— Ground color black with yellow markings.

8. P. Asterius, *Fabr.* Wings black with two rows of macular yellow bands; anal eye red with a black spot. Posteriors with blue lunules between the yellow bands, larger in the ☿. The yellow bands in the ♂ are much heavier than in the ☿, expands two and one-half to three inches.—U. S.

Var: *asteroides*, *Reak*. Like the above, but the ☿ has the yellow bands on primaries as heavy as in the ♂, size same as asterius.— U. S.

Var: *Brevicauda*, *Saund*. Northern form of Asterius, the ☿ however has the yellow bands heavier than the ♂; tails slightly shorter; size somwhat smaller than Asterius. Anticosti.—New Foundland, Quebec.

Var: *Calverleyi*, *Grote*. Wings basal ground black, the outer half bright yellow, inclining to orange on the posteriors, a narrow black marginal band. Size same as Asterius. Only two specimens known, one ♂ taken on Long Island, and one ☿ in Florida.

9. P. Americus, *Koll.* Closely allied to Asterius. Wings black, with wide deep yellow bands, much broader in secondaries; anal eye like in Asterius. The yellow bands on underside are broader and bordered with bright orange. Size same as Brevicauda. Southern California.

10. P. Indra, *Reak.* Ground-color black with a band of pale yellow spots; marginal spots on primaries and lunules along the margin of the secondaries also pale yellow; anal eye same as in Asterius, to which it is closely allied.
The main difference is in the body, which is perfectly black with slight yellow markings on the anal segment, while Asterius has four rows of yellow spots on the abdomen. Size of Brevicauda. Colorado, Nevada.

11. P. Troilus, *Linn.* Wings black; primaries with a marginal row of pale yellow spots; secondaries with greenish lunules along the margin, the upper one partly orange, above these lunules in the male a wide green band, in the ☿ this band is blue; anal spot orange; tails broad and black. Size 3 to 4 inches.—U. S.

12. P. Palamedes, *Drury.* Wings black with a yellow band on primaries and secondaries. Along the outer edge of primaries a row of yellow spots, and of secondaries a row of yellow lunules. Anal spot with a bluish crescent, tails black with a yellow ray in the middle. Expands three and a half to four inches.—Southern States.

13. P. Chresphontes, *Cram.* Wings black with a yellow macular band on primaries and 4 yellow lunules near the inner angle. Secondaries also with a yellow band and 6 or 7 yellow lunules, the anal spot has an orange crescent, blue above, tails black with a yellow spot. Expands 4 to 5 inches. —Southern States.

14. P. Philenor, *Linn.* Wings black with a greenish reflection, primaries sometimes with a row of whitish spots along the outer margin. Secondaries have a row of 6 white lunules, tails black, under side of the secondaries have 7 large bright orange lunules, surrounded with black. Expands three to three and a half inches.—U. S.

NEW PUBLICATIONS.

The Coleoptera of the Alpine Regions of the Rocky Mts.

(*Haydens U. S. Survey, Washington May*, 1878.)—**Contents:**

BY JOHN L. LECONTE, M. D.

Description of the new species; Pterostichus [Cryobius] surgens;—Platynus jejunus, [with a table of the subgenus Rhadine];— Amara [Curtonotus] cylindrica;— Harpalus clandestinus;— Bembidium Bowditchii, B. Scudderi;— Hydroporus congruus, Gaurodytes nanus;— Geodromicus ovipennis, Orobanus simulator n. g. and n. sp.;— Scymnus nigripennis;— Aphodius bidens, A. duplex, A. obtusus, A. cribratus, A. anthracinus, A. brevicollis, A. marginatus, A. phaeopterus, A. cruentatus, A. subtruncatus, A. scabriceps, A. explanatus, A. rudis, A. sparsus, A. humeralis — Anthaxia deleta, Chrysobothris carinipennis;— Corymbites planulus; — Podabrus brevipennis;— Melyris atra, M. flavipes; — Crossidius Allgewahri, Neoclytus ascendens;— Glyptoscelis longior, Chrysomela montivagans;— Magdalis alutacea; also:

A list of coleoptera collected, by Mr. F. C. Bowditch in the Rocky Mts. at an elevation of 6000 feet and upwards.

List of species peculiar to the Mountain Region.

List of coleoptera collected at Atalanta, Idaho, (7800') by Mr. L. Allgewahr.

On the North American Species of Nebria; with a table showing the resemblance between the species, and a description of the new species; **Nebria ovipennis, N. purpurata, N. trifaria, N. longula, N. obtusa.**

Revision of the Bostrichidae and Synopsis of the Colydiidae of the U. S.

BY GEO. H. HORN, M. D.

[*Proc. Am. Phil. Soc.* 1878 *vol. XVII page* 540—592.]

Describes the new species: Sinoxylon texanum, S. dinoderoides, S. bidentatum, S. suturale;— Tetrapriocera Schwarzi, n. g. and n. sp.;— Bostrichus californicus;— Amphicerus teres;— Dinoderus truncatus, D. brevis;— Cicones lineaticollis;— Endophloeus nosodermoides;— Phloeonemus catenulatus;— Coxelus pacificus;— Lasconotus borealis;— Socylus dentiger.

An Account of some Insects of unusual interest from the tertiary Rocks of Colorado and Wyoming.

BY S. H. SCUDDER.

(*Haydens U. S. Geol. and Geog. Survey, Washington May*, 1878.)

Describes species of several orders, among them the finest known specimen of pertrified Lepidoptera Prodryas persephone, the first fossil butterfly found in America.

F. G. Schaupp.

The European *Aphodius consputus* Creutz is very common near Orono Me.

C. H. Fernald

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BULLETIN.

—OF THE—

Brooklyn Entomological Society.

BROOKLYN, AUG. 1878. No. 4.

PRACTICAL HINTS ON COLLECTING COLEOPTERA.

BY H. SCHMELTER.

Continued.

Some writers recommend for the capture of species living with ants, to sift the material composing the nests of ants in winter while the ants are in a torpid state and can not molest the collector in this operation. But as I have not been able to find ant-hills around New York, I can not speak with personal experience of its merits.

Placing of small stones in the vicinity of these nests in spring as traps for the coleoptera parasites of ants, is also recommended.

Occasional careful inspection of the under side of these stones is said to give often very satisfactory results, less in the number, than in the value of these minute species found. I have not practically tested this method and I would therefore be greatly pleased, if collectors who are in the position to employ both methods would communicate with me on their experience.

With the increasing warmth of spring ponds and brooks offer good collecting fields. A net is required made of some strong and at the time porous cloth; the one which I use is made of ordinary muslin, with a bottom of the finest brass wire cloth, the meshes of which do not exceed ½ mm.

The water will readily pass through this net, but even the most minute insects will be retained. Mr. Isenschmidt recommends in the "Entomologische Nachrichten of Puttbus," a net constructed entirely of woven wire. But besides the difficulty and expense of obtaining such a net, transportation must be very inconvenient, and I believe therefore that the first named net will have the preference with most collectors. During a collecting trip without a net the inhabitants of rain pools and puddles etc. can be captured by disturbing the water with a stick and thus bringing up the impurities from the bottom. Soon thereafter insects will be seen floating on the surface and can be easily captured with the hand.

The decaying vegetable substances, leaves etc. on the bottom of ponds, as well as the weeds and plants growing therein should be taken out with the net and carefully examined, and will yield many small species. I have never found *Elmidae* between such substances, although I have heard that other collectors have done so.

Elmidae and *Parnidae* can be taken on wood immersed in running water, in which some obstruction causes a strong current.

Wood appears to be generally preferred by them and can be laid as traps on the bed of a brook in suitable places. I have repeatedly taken as many as fifty and more specimen on a short piece of board.

With the advancing summer the most useful tool for the collector will be the beating net. With it the blooming meadows, the shrubbery on the sides of country roads and foot paths, the low trees on the boarders of woods and on the banks of brooks and ditches, bushes and the like are swept by dexterous strokes. After 15 or 20 strokes the contents of the net should be examined and if the locality has been well selected, it will contain a great variety of insects of all orders, and generally a collector gets more desirable species than he is able to collect in any other way.

The larger the net, the better it will of course be adapted to the purpose. A strong wire ring of one to one and a half foot in diameter with a bag of muslin attached of at least the same depth, firmly fixed to the end of a stick about 2 to 3 feet long, represents the most simple and durable beating net. To make it more convenient for carrying, quite a large number of different constructions have been recommended. A very practical one is that described by Mr· Hoyt in the present number.

In another form which is much used, the ring consist of different parts, two or three, which are connected by means of joints, and the ring can be folded when not in use By means of a screw the ends of this ring are firmly fixed into a tube, which again fits tightly on the end of an ordinary walking cane. In any fishing tackle store, rings of this or of a similar construction are for sale, and it is therefore unnecessary to give here a more detailed description.

(To be continued.)

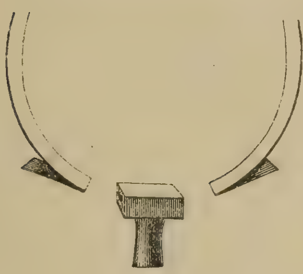
Mr. Kampfmuller, will furnish nets of any description, his address will be found in the advertising columns

NEW COLLECTING NET.

A very serviceable collecting net can be made in the manner described below. In addition to strength and durability, it has the advantage over the more common forms, that it can be rolled into a very small compass, and carried in a comparatively small pocket. It is particularly useful in collecting on the ground, or in places where a certain amount of elasticity is desirable in a net.

It is made of large size hoop-skirt or flat steel wire. Hoop-skirt wire of the ordinary thickness ¼ inch wide, will answer very well, but a trifle larger wire would be preferable.

Take a piece of wire about a yard long. Slightly heat, and bend back about 1¼ inch at the ends, so that the wire at these points will be double, for the distance named, and present springs of a wedge shaped appearance, leaving ¼ inch between the reflexed or bent end of the wire and the main piece. The point at which the bend is made will naturally appear like a loop, Tthis should be flattened. When completed the two ends will be V shaped, the main wire connecting the two V's and forming in each case also one of their arms.



Now all that is necessary to complete the net is a tube with square sides, made of brass. This can be easily formed and soldered upon a square arbor. To this should also be soldered a socket or ferule to hold the handle. This part when done will present the appearance of a T. After sewing on the netting, insert the two ends of the hoop in the square socket, and the net will be ready for use.

The springs that were formed at the ends of the wire will keep the net firmely in place, and those unacquainted with this form of net will be surprised at the service it will do. When not in use the hoop can be removed from the socket and the net rolled up in the space of a few inches and with the former kept in the pocket. The writer usually carries it in this way and cuts a stick for a handle, when he gets into the country. The annexed illustration gives a fair idea of how the net should be made.

CHAS N. HOYT.

Callida punctata *Lec.* is said to occur quite frequently near Buffalo on the flowers of Solidago in August and September.

The Cicindelidæ of the Neighbor-hood of New York.

1. Cic. unipunctata. *Fab.* Two specimens were collected by F. G. Schaupp in June, one at Fort Green, Myrtle Ave. on top of the hill, the other near Myrtle Ave. Carstable, cor. Broadway and Myrtle Ave. Brooklyn, L. I.
2. Cic. rugifrons, *Dej.* One specimen collected by Dr. H. Saltzwedel at Jamaica L. I. near the South Side R. R. Depot, July 4th.
3. Cic. modesta *Dej.* May, June and Sept. near the fire-work factory in Greenville, N. J. in the sandpit near the cemetery at Marion, N. J. and by Mr. A. S. Fuller near his residence in Ridgewood N. J.
4. Cic. sexguttata *Fab.* June to Sept In the wood near Ridgewood Water Reservoir, and in that behind the Pennybridge on the road to Winfield, L. I. Fort Lee. N. J. etc.
5. Cic. limbalis, *Kl.* May. One specimen collected by Mr. H. Koestlin near Fort Lee. N. J.
6. Cic. purpurea *Oliv.* March, Sept. On the empty lots cor. Myrtle Ave. and Broadway, in the wood near Ridgewood Water Reservoir, L. I. and at Fort Lee. N. J.
7. Cic. generosa *Dej.* May and June at the same localities as No. 3.
8. Cic. tranquebarica, *Hbst.* June, Sept. On the road near Greenville N. J. and near East New York, L. I.
9. Cic. 12 guttata, *Dej.* May and June. On sandy roads near the Hoboken Gashouse N. J., in Middle Village Cemetery, and near Myrtle Ave. Carstable, L. I.
10. Cic repanda, *Dej.* June to October. On the roads near Pennybridge, L. I., Greenville, N. J., W'msburgh Slaughterhouse; on rainy days to be picked easily out of the holes; Coney Island and Rockaway Beach, L. I.
11. Cic. hirticollis, *Say.* March–Sept. On Coney Island and Rockaway, L. I. near the shore.
12. Cic. dorsalis, *Say.* July–Sept. On the Shores of Coney Island and Rockaway Beach, L. I.
13. Cic. marginata, *Fab.* July–Sept. Northport, and Canarsie, L. I; Greenville, N. J; near the shore.
14. Cic. lepida. *Dej.* June and July on the sand-hills near the landings at Coney Island, L. I.
15. Cic. punctulata, *Fab.* June–Sept. often found in the streets of the City. near Middle Village Cemetery, East New York, L. I. and Greenville, N. J.

SP.

DIACHILA, Mots.

D. subpolaris. *Lec.* Dark bronze, shining, underside and legs black. It resembles Blethisa, but differs from it by the last joint of maxillary palpi being elongated as in Elaphrus, and from Elaphrus by having small eyes and the elytra striate without large foveae.

Lec. New species I. page 2. Length 10 mm. Hudson Bay Terr.

BLETHISA, Bon.

Blethisa resembles Elaphrus, but has the head narrower and the eyes smaller, head and thorax parallel, elytra distinctly foveolate. They live during summer near rainpools.

Crotch classified them as follows (Trans. Am. Ent. Soc. V. 247).

Thorax punctate above	**1. Julii.**
Thorax smooth	
Thorax quadrate	**2. quadricollis.**
Thorax subcordate	
Thorax punctate beneath	**3. multipunctata.**
Thorax smooth beneath	**4. oregonensis.**

1. Julii, Lec. New spec. I. 1863. page 2. Length 11 mm. Nova Scotia.
2. quadricollis, Hald. Proc. Ac. Phil. III. 149. Length 15 mm. found in Wisc. and N. Ills.
3. multipunctata, Lin. Faun. Suec. Nr. 805. Length 12 mm. Europe and North U. S.
4. oregonensis, Lec. Classif. Carab. page 401. - acutangula, Chd. Length 12 mm. Oregon.

Synoptic table of the three genera of ELAPHRINI.

By Geo. H. Horn. M. D.

Eyes prominent. Elytra foveate.	**1. Elaphrus.**
Eyes not prominent.	
Last joint of maxillary palpi long. Elytra not foveate.	**2. Diachila.**
Last joint of maxillary palpi short. Elytra foveate.	**3. Blethisa.**

LORICERA, Latr.

First joint of antennæ very long, joints 2–6 furnished with long diverging bristles. They live near rainpools or near swamps in woods.

Synoptic table by Geo. H. Horn. M. D.

Elytra with a single series of foveolae.	
Sides of thorax posteriorly oblique, hind angles not prominent	**1. caerulescens.**
Sides of thorax slightly sinuate, hind angles subrectangular.	**2. californica.**
Elytra with a double series of foveolae.	
Legs black; hind angles of thorax rectangular.	**3. decempunctata.**
Legs testaceous; hind angles obtuse.	**4. foveata.**

1. caerulescens, Lin. Syst. Ent. page 243. - pilicornis Fab. - semipunctata, Mann. Bull. Mosc. 1843. page 91. - neoscotica, Lec. New Spec. Col. I. 1863. page 3. Length 8–9 mm. North of Europe and of U. S.
2. californica, Lec. New Spec. Col. I. 1863. page 3. Length 8mm. Cal.
3. decempunctata, Mann. Bull. Mosc. 1843. page 92. Length 9 mm. Sitka.
4. foveata, Lec. Annal. Lyc. V. page 180. Length 8 mm. Cal.

L. congesta, Mann. Bull. Mosc. 1853. III. 121. from Kenai appears to be described from a deformed specimen, as two foveae on the disc of thorax in front of middle are mentioned, this being rather a deformity than otherwise.

TRACHYPACHYS, Mots.

Resembles a small Amara and differs from all the other Carabidæ by the posterior coxæ attaining the margin of the body.

Synoptic table by Geo. H. Horn. M. D.

Thorax narrower at base than at middle ; basal transverse impression deep.
1, inermis.
Thorax not narrowed at base ; basal transverse impression shallow.
2. Gibbsii.

1. inermis, Mots. Kaef. Russl, page 16. not. 6 - Holmbergi, Mann. Bull Mosc. 153. III. page 19s Length 4 mm. Alaska.
2. Gibbsii, Lec. Proc. Ac. Phil. 1861. page 339. Length 5 mm. Cal.

NOTIOPHILUS, Dum.

Head triangular, as broad as thorax, anterior tibiae obliquely truncate. Color bronze.

They live in damp, sunny places under fallen leaves etc.

Crotch [Trans. Am. Ent. Soc. V. 247], classifies them as follows:

Legs red.	**1. aeneus.**
Tibiæ pale, femora metallic black.	
Striæ geminate, interstices opaque.	
Elytra three-foveolate.	**2. semiopacus.**
Elytra one-foveolate.	**3. nitens.**
Striæ uniform, interstices shining.	
Elytra yellow at the sides.	**4. sylvaticus.**
Elytra unicolorous.	
Striæ entire, closely placed.	**5. semistriatus.**
Striæ effaced at apex, intervals broader.	**6. sibiricus,**
Legs entirely metallic black.	**7. Hardyi.**

1. aeneus, Hbst. Col. X. page 235. - porrectus, Say. Trans. Am. Phil. IV. 418. Length 5 mm. North U. S.
2. semiopacus, Eschh. Zool. Atlas V. 25 tab. 25. f. 6. Length 5 mm. Cal.
3. nitens, Lec. Ent. Rep. 1857. page 31. Length 5 mm. Oregon.
4. sylvaticus, Eschh. Zool. Atl. V. 24 tab. 25. f. 5. Length 5 mm. Sitka.
5. semistriatus, Say. Trans. Am. Phil. II. 81. - novemstriatus, Lec. Ann. Lyc. IV. page 350. Length 5 mm. Cal.
6. sibiricus, Mots. Ins. Sib. page 71. tab. 3. f. 1. - punctatus, Lec. Aggss. Lak. Sup. page 210, Length 5 mm. East Sibiria, North U. S.—confusus Lec.
7. Hardyi, Putz. Mem. Liege 1866, page 165. Length 4 mm. Newfdld. N. Y.

SP

OPISTHIUS, Kirby.

O. Richardsoni, Kirby. Dark bronze, subopaque. Thorax broader than long. Elytra depressed, broadly oval and with three discal series of large foveae, and a smaller submarginal series.—Kirby, Fauna Bor. Am. page 61. pl. 1. fig. 9. Length 10 mm.

Fort Bridger, Wyoming and from this point N. W. to Oregon and N. E. to Hudson Bay region.

GEO. H. HORN.

On the Capture of Oncocnemis Chandleri, *Grote.* Var. Riparia, *Morrison.*

On July 7th and 8th 1875 I took at Locust Valley, L. I., about twenty specimens of this species. I found them concealed in the crevices of a few bathing houses on the shore of L. I. Sound, and it was only with difficulty that I succeeded in driving them from their hiding places into the cyanide bottle; several specimens escaped, but I was fortunate enough to secure most of them. The majority were males, still I got quite a fair proportion of females.

The capture is interesting, inasmuch as the species of the genus Oncocnemis both in Europe and in this country had thus far been found to inhabit only the mountains.

F. TEPPER.

Cucujus clavipes *Fab.* was so frequent in a little forest near Belleville N. J. that under the bark of about 10 decayed trees several hundreds of this species, always considered quite rare, were secured.

Lebia grandis *Hentz.* was during this winter in the woods near Jamaica L. I. the most common beetle. A few hundred specimen were captured.

C. FUCHS

NEW PUBLICATIONS.

Part 15 Lepidoptera BY HERMAN STRECKER is received, and contains information of great interest: we cannot however but object to the personalities therein contained.

We would also call attention to the fact that although issued in July 1878, it bears the date 1877 conspicuously displayed on its cover.

"Psyche," in its recent issue takes notice of the May number of our Bulletin by calling our attention to proof reading. Mr. Mann has our cordial thanks for his courteous advice, but we are surprised to find this criticism in a number claiming on its face to be issued in January and February, two or three months prior to the issue of our own paper. The criticism is good, but the critic should be careful to avoid such contradictions in dates.

Mr. S. Cassino has during the last month published the new naturalists directory. Price to subscribers $1. to others $3.

The promised improvement over the previous directory is not altogether evident to us, as the entire omission of a society to which reference was made in the first, and similar discrepancies in the last book do not speak well for the promised careful compilation.

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Keeps constantly on hand a full assortement of Texan Coleoptera and offers the same for sale or exchange. Just on hand a few specimens of Stenaspis splendens, *Lec.* Gymnetis Sallei, *Schaum.* Stenaspis solitarius, *Say.* Dynastes Tityus, *Lin.*
18 diff. species of Texan Cicindelæ.

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BULLETIN.

—OF THE—

Brooklyn Entomological Society.

BROOKLYN, SEPT. 1878. No. 5.

PRACTICAL HINTS ON COLLECTING COLEOPTERA.

BY H. SCHMELTER.

Continued.

Woodboring coleoptera may be captured, often in large numbers, by sawing off the dead branches of trees in spring, gathering plants with pithy stems, such as the elder, also reed, etc., and piling up these materials in an empty room with tightly closing door and windows, the latter best made of wire screen, so as to admit of a free circulation of air. If a special room for this purpose is not at disposal, a large box connected with a small one of which several sides should be made of glass will answer. The insects after having made their way out of the wood during spring and summer will be attracted by the light to the windows of the room or into the smaller box and can there be easily captured.

Another opportunity for wholesale capture of beetles is often afforded to the New York collector during summer on the beach of Coney Island and Rockaway. At any time insects washed ashore by the tide may be found there, but after a strong easterly wind the number and variety is quite remarkable. Most of them are certainly swept by the wind into the sea at the Highlands on the Jersey coast and carried by the tide to the opposite shore, but some are evidently carried a long distance, Omophron nitidum, *Lec.* Alaus myops, *Fabr.* Tragidion coquus, *Linn.* and other evidently southern species having been found on the beach.

Besides these a great many other species living under seaweed, or pieces of wood and other objects cast up by the tide may be found there. A specification of these sea-shore species, which may not be uninteresting, I shall reserve for a future occasion.

But many species of coleoptera can not be captured in the manners alluded to, and therefore traps have to be laid for them, or other means employed to force them to leave their hiding places.

I will cite in the following a number of traps and methods of capture known to me, but as almost every collector has some method of his own, often a jealously guarded secret, it will be far from exhausting this topic.

For the capture of carrion beetles a method has been described in a previous number, but the bait there recommended viz: refuse meat, will only attract a very limited number of species, although it is of all of these methods, causing without exception a great discomfort to our nasal organ, the least objectionable.

Carrion of different kinds of animals will attract different species of insects. Some of these only feed on the flesh, while others take to the skin and hair or feathers of the carrion; and others again make their appearance only after the skeleton is exposed.

In baiting for *Necrophoridæ* different sorts of bait, *i. e.*, mammalia, birds, reptiles, should be laid and the inspection not discontinued after the flesh has disappeared, as then only the most interesting and rare species can be captured. By a piece of cord fastened to it the carrion can be lifted and slightly shaken over a bag into which the insects will drop. Smaller bait may be enclosed in a wide mouthed bottle, dug up to the mouth in the earth. Some leaves should be placed on the bottom of it to offer hiding places and to prevent the captured insects from making war against each other. Old cheese is said to be a good bait.

Another way of baiting is "sugaring." A mixture of sour beer and molasses in equal parts, flavoured with a little brandy, is an excellent bait applied to boards, stumps or trunks of trees; it will attract, especially in the evening, besides numbers of Lepidoptera also many Coleoptera, Cerambycidæ, Elateridæ and others.

Heaps of weeds, if left to rot will attract numbers of insects which can be captured by sifting the weeds from time to time.

Fungi may be made use of in the same manner to great advantage.

Blowing tobacco smoke into the crevices of wood, fence posts etc., will be effective in driving out the insects hiding therein.

(To be cotinued.)

Relating to the species ennumerated in Mess. Hubbard's and Schwarz's list of Fla. Coleoptera (see this No. of Bull. p. 39) we can add: Cychrus elevatus, *Fab.*; Dicaelus furvus, *Say.*; Geotrypes retusus, *Lec.*, and Blackburnii, *Fab.*; Trox monachus, *Hbst.*; Lachnosterna crenulata, *Froehl.*; Macrodactylus angustatus, *Beauv.*; Elater rubricollis, *Hbst.*; Callichroma splendidum [red var.], *Lec.*; Strangalia bicolor, *Swed.*; Cryptocephalus congestus, *Fab.*, and confluens, *Say.*; Helops undulatus, *Lec.*; etc., etc.

On Raising Coleoptera in Captivity.

February 5th, I found two Cychrus Lecontei in coitu under moss, and put them in a breeding box, they were in coitu from Febr. 5 to 9th, then from Febr. 18 to 23rd, then again from March 10 to 13.

They fed on snails, and the snails on cabbage leaves.

April 1st found another male, of which I cut off a few joints of one antenna, in order to distinguish it, five minutes after entering the cage, the new male had already copulated with the female, and remained so till April 4th, then copulated again from April 5 till April 9th. April 18 two of them fought about a soft larva and one drove the other away. April 24th, I removed the three Cychrus into another box, as I feared they might eat their own young.

May 20 I found them all dead and no trace of eggs.

March 31, I captured several Carabus limbatus and put six males and six females in a cage, I fed them every second day with a piece of veal or beef [as large as a finger].

Very often some of the Carabi ran to the meat as soon as it reached the bottom of the box and soon the whole colony either attracted by its smell or by the noise made with the maxillæ and legs of those already feeding drew near. I had one larva and several eggs, when I left for the country (July 4).

In a third cage I had six Chlænius æstivus: two male and four female and the same number of Galerita janus. As the larva of Galerita has already been described and has a very different form from other Carabidous larva I thought there would be no difficulty in distinguishing them. I fed them also with meat, adding occasionally a few leaves of lettuce. I had one larva of Galerita, two larvae of Chlaenius, (which have the two appendages on the tergal part of the last segment furcated) and several eggs (July 4th).

In the fourth cage I had severalu Cucujs clavipes, of which I raised several larvae. In another cage I had a lot of Coleoptera viz. Pterostichus, Chlaenius, Platynus, Galerita, Lebia, Dacne, Diaperis hydni, Chrysomela, Cucujus clavipes, Sphenophorus etc.

They were fed with meat and vegetables.

As a matter af course the bottom of each box was covered about 2 inches high with earth, moss, and decaying wood upon it, for hiding places, and the ground sprinkled with water every two days.

I also kept alive in one cage several Cicindela sexguttata and repanda for three months, which copulated intermiscuously, dug holes etc. but no larvæ were found.

Now my experiences are:

1. The wire cloth for the boxes must be that with the smallest holes possible, to prevent the young larvæ from escaping through them.
2. All the ingredients for the cage, sand, earth, rotten wood, moss, etc. have to pass a bath of boiling water to destroy any insect life (eggs or minute larvae) that might be previously contained and otherwise introduced into the cage and so lead to mistakes.
3. To procure live food leave the meat a few days in the cage with some meatflies, deprived of wings and the magots of the flies will soon hatch and produce fine food for the larvae.
4. When you see a sufficient number of eggs in the cage, do not remove the eggs, which are usually imbeded in the earth, but remove the beetles and leave the eggs in the cage.
5. During day time keep the caged beetles in a dark cool place, and place them during night before the window in the open air, except of course Cicindelidae etc.

At night all the inmates of a cage become very lively, try to escape and are all on the top of the wirecloth-sides of the cage.

When I left town for the country (July 5th) I intrusted my cages to the care of some members of our Society and I am very desirous to see the results after my return (Sept. 5th).

Now if every one of our readers would try to raise but one species of coleoptera, which would in no way cause to much trouble, and communicate the results with us, I think it would be a great thing. Further particulars willingly given if desired by letter.

F. G. SCHAUPP.

Variety of Hypercheria io, *Fabr.*

A year ago last spring I had about 30 pupae of Hypercheria io, all from one brood. In due time the imagines emerged, and one of these chrysalids produced a very striking female aberation.

The primaries of this specimen are lighter in color and have a more redish tint; the transverse lines are closer together than in the typical form and the discal spot is very indistinct.

The posteriors lack the black stripe that runs beteen the red band along the exterior margin and the eye; in its place a broad black band connects with the eye from the interior margin and the abdominal edge of the secondaries. The red band is about three times the width of that in ordinary specimens.

FRED. TEPPER.

SYNOPTIC TABLE OF LEPIDOPTERA,

GENUS PAPILIO, *Lin.*

(Continued.)

P. Bairdii, *Edwards.* Ground color black, both wings with a marginal row of yellow lunules; the inner band is yellow, nearly as in Asterius; anal spot orange; tails long and black. Expands four inches. Arizona.

C. Ground color black, with blue markings.

P. Villiersii, *Bdv.* Wings, ground color greenish black; primaries with a submarginal row of small bluish lunular spots; secondaries with a row of very large blue lunules; tails spatulate, long. Expands three and a half inches. Florida, Cuba.

D. Ground color green with black markings.

P. Sinon, *Fabr.* Wings ground color pale green with black markings much like Ajax, but heavier; the primaries have a marginal row of irregular pale green spots, and the secondaries a marginal row of lunules of the same color; anal spot bright red; tails rather long and black. Expands about two and one half inches. Florida, Cuba.

Group II.

P. Polydamas, *Lin.* Wings greenish black; primaries with a marginal row of yellow lunular spots; secondaries with large yellow lunules; no tails. Expands about three and one half inches. Florida, Cuba.

The following two species are unknown to us:

P. Pergamus, *H. Edw.*
" **Hippocrates,** *Felder.*

GENUS PARNASSIUS *Latr.*

Head moderately large, palpi long and clothed with fine hairs; antennae short, terminating in a stout elongated club; body thick and heavy, the abdomen of the ♀ is provided with a pouch or horny valve. Wings, parchment like, nerves prominent and nearly destitute of scales on the under side and towards the summit of the upper side; secondaries have the abdominal edge sloped, leaving the abdomen entirely free.—

We may divide the Parnassians of North America into two groups:

I. White with black markings—Type, **P. Smintheus,** *Doubl.*
II. Yellow with black markings—Type, **P. Eversmanni.** *Men.*

P. Smintheus, *Doubl.* ♂ Wings clear white; primaries with two marginal narrow zigzag bands of black, the basal area has two deep black spots and two or three red spots bordered by black and sometimes connected; secondaries with a marginal row of black spots, which in some specimens are very indistinct, and with two red ocelli bordered by black and having sometimes a white spot in the middle; body black above and white below. Expands two to two one half inches. The ♀ has the wings more transparent and more heavily marked with black, the red spots and ocelli are also larger and more prominent. Colorado. California.

P. Clodius, *Men.* Somewhat larger than the above; the primaries are more heavily marked with black and lack the red spots, secondaries with two red ocelli bordered by black, the ♂ has no marginal row of black spots. Expands about three inches. California.

P. Clarius, *Eversm.* Very close to the above, but smaller and with the black markings slighter; the red ocelli on the secondaries are smaller. Expands two to two one half inches. California.

P. Nomion, *Fisch.* Wings clear white, primaries with a marginal band of grayish black, intersected by white spots, and a submarginal row of irregular black spots; between this and the base are five large black spots: secondaries have two large red ocelli heavily bordered by black, and a marginal row of black spots. Expands about three and one half inches. Alaska, Sitka, Siberia.

Group II. contains but one species:

P. Eversmanni, *Men.* Wings, ground color citron yellow with the semi-transparent black shadings on primaries common to most all Parnassians; secondaries with two red ocelli. Expands two and one half inches. Alaska.

GENUS PIERIS, *Schrk.*

Head rather large; eyes naked; palpi rather long, clothed with rigid hairs; antennæ moderate; abdomen slender and somewhat shorter than the secondaries; wings moderately strong, the discoidal cell closed.

Group I.

Pieris Menapia, *Felder.* Wings pure white; primaries, costal margin black, an elongated black spot bordering on the discoidal cell, and an irregular black band extending over the apex and about three quarters of the exterior margin, containing generally five white spots, sometimes less; secondaries with the veins more or less prominently black. The female has a black band near the exterior margin of the secondaries and the veins between this band and the exterior margin are heavily marked with black; the underside of the secondaries of the female are bordered by streaks and spots of orange red; a slight tendency to this marking occurs sometimes in the male. Expands from one three quarter to two and one quarter inches. Colorado, Oregon, California, Vancouvers Island.

Group II.

Pieris Ilaire, *Godt.* Wings clear white with the costal margin and exterior margins of primaries and secondaries very slightly bordered by black; the wings are rather elongated; body blackish above, white beneath. Expands two and one half inches. Florida (occasional).

Pieris Monuste, *Linn.* Wings white; primaries with the costal margin black, and the exterior margin with a black border, wider at the apex and serrated within; in the ♀ the black border is broader with two white rays towards the apex, and there is a black spot on the middle of the anteriors; the secondaries of the ♂ are entirely white, the ♀ has a series of black triangular spots along the exterior margin; body black above and white beneath. Expands from two to two and one quarter inches. Southern States, Texas.

One form of the ♀ P. cleomes, *B'dv.*, is entirely smoky gray with the same markings as the normal form.

(To be continued.)

I remained at Capon Springs, W. Va. from the middle of June to nearly the end of August. Insects were not very abundant, and but a few rare species were found. Even the fungi which grew plentifully in August failed, with the sieve, to give more than two or three Homalotæ, some very ordinary species of Gyrophæna, and a few Boletobius, and Oxyporus.

Staphylinus fossator was not rare in fungi. I observed that Cicindela patruela was double brooded ; the first brood disappeared about the end of June, and the second appeared towards the end of August, C. rufiventris appeared first about the middle of July and remained abundant until the end of August. Dicerca —— was taken in moderate numbers on a persimmon tree (Drospyros virginiana) in front of the hotel, from the beginning to the middle of July. John L .Leconte, M.D.

I succeeded this year in raising Dicælus elongatus and politus etc. Descriptions will be given in our next number. F. G. SCHAUPP.

NEW PUBLICATION.

Coleoptera of Florida and Michigan, by H. G. Hubbard and E. A. Schwarz. Descriptions of new species, by J. L. Leconte, M.D., and E. A. Schwarz.

Proc. Am. Phil. Soc. XVII., 1878, pp. 353–670.

Contains :—

Descriptions of 33 new species, by Schwarz, with a synopsis of Cyclonotum.

Descriptions of 148 new species, by Dr. Leconte, with synoptic tables of Loxandrus, Ochthebius, Trimium, Acylophorus, Cryptobium, Paederus, Palaminus, Catorama, Caenocara, Chaetocnema, Hypophloeus, Strongylium, Xylophilus.

A list of 1457 Fla. species, by Schwarz.

Remarks on Geographical Distribution, by Dr. Leconte.

Description of 80 new species from Michigan, by Dr. Leconte, with synoptic tables of Mycetophagus, Diplocoelus, Litargus, Aegialia, Mycetochares, Hallomenus, Orchestes.

List of Coleoptera found in the Lake Superior Region, and

Contribution to a list of the Coleoptera of the Lower Peninsula of Michigan, by Hubbard and Schwarz.

Description of the larva of Micromalthus debilis *Lec.*, with a plate, by Hubbard.

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BULLETIN.

—OF THE—

Brooklyn Entomological Society.

BROOKLYN, OCT. 1878. No. 6.

PRACTICAL HINTS ON COLLECTING COLEOPTERA.

BY H. SCHMELTER.

Concluded.

The last and one of the best traps to be described is the light trap which may be easily constructed in the following manner.

A lantern, combined with a reflector, is suspended outside on the wall of a house or on a post, and directly under it is placed a funnel, by at least several inches larger in diameter than the lantern, the tube of the funnel reaching into a bottle partly filled with diluted alcohol. This trap will become the more effective the more isolated the locality.

A lamp placed on a table before an open window will also answer the purpose.

Though living in the city I have captured quite a number of insects in this manner, and in the country it has always proved very successful.

In concluding this article I hope that other practical collectors will take up the subject and give us their own experience on the habits of coleoptera and their capture. We do not need to visit distant places in order to get new additions to our cabinets, as much can be done yet by thoroughly exploring our own localities. Even one so much frequented by collectors as that around New York city has yielded in the last years, especially by use of the sieve, a number of new species of *Staphilinidæ* and other families.

DESCRIPTION OF THE LARVA OF STAPHILINUS MACULOSUS. *Grav.*

Form elongate ; narrower posteriorly,

Color castaneous ; abdomen dirty white.

Head subquadrate, suddenly constricted at the base ; hind angles rounded, above slightly flattened, beneath feebly convex, gular region in front slightly concave ; frontal margin arcuate, strongly serrate with 9 teeth.

Eyes four on each side, placed behind the base of the mandibles.

Antennæ four jointed, arising from the front within the base of the mandibles, and not longer than those ; first joint short, conical; second elongate, slightly clavate : third, two-thirds the length of second and more slender, and with a short spine at tip on the inner side ; fourth joint very slender and half the length of the third, these last two joints with several short hairs near their tips.

Mandibles simple, moderately elongate and arcuate.

Maxillae moderately long, basal joint short and rather stout, second or cardinal piece elongate, with a short lobe of two immoveable joints arising from the tip at the inner side and a three-jointed palpus externally, the first two joints of the palpus are similar, the third shorter and aciculate.

Mentum triangular, narrowest in front, coriaceous, supporting a ligula which is narrow at base, suddenly broader at apex, and with a terminal acute prolongation, palpi two-jointed, the basal joint elongated, the terminal joint scarcely half as long, slender and awl-shaped.

Prothorax slightly broader than long, narrower than the head, broader at base than apex, sides very feebly arcuate, surface smooth, an antebasal transverse line.

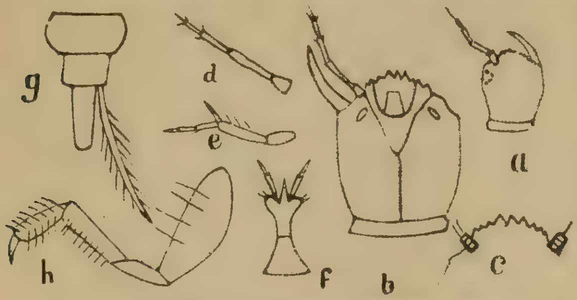
Mesothorax transverse, much shorter than the prothorax, slightly narrower and with antebasal line.

Metathorax similar to the mesothorax.

Abdomen first segment narrower than the others, segments 2–8 gradually more elongate and narrower, ninth very small and tubular and with a moderately long tubular prolongation, and two slender subarticulated appendages, which have long bristly hairs.

Spiracles, nine on each side, the first large, under the basal angle of the prothorax, second at the side of the first abdominal segment a little smaller than the first ; spiracles 3–9 are small and situated at the sides of the abdominal segments 2–8.

One of the notable characters of the larva is the fact that the mouth is very small, the only opening being that from which the mentum arises, the sides of the gula around the mentum and the maxillæ forming a close union with the upper portion of the head.



a. Head, above.
b. Head, beneath.
c. Front.
d. Antenna.
e. Maxilla.
f. Mentum.
g. Appendix.
h. Leg.

Larva of Staphilinus maculosus.

When the larva is full grown, it builds a nest of grass and earth under stones, boards, etc., and forms a pupa covered by a brown shining chitin, like that of the moths, but greatly differing by its flattened shape; after fifteen days the pupa becomes darker pue the 17th day the imago develops, being first pale-brown, but coloring fully after two days.

Larva found.	Pupa.	Imago.
Aug. 3th.	Aug. 19th. . . .	Sept. 6th.
Aug. 14th.	Aug. 15th. . . .	Sept. 1st.

LARVA OF DICÆLUS ELONGATUS, *Dej.*

This larva resembles very much that of Dicaelus dilatatus, described in No. 1 of our Bulletin, and that described by Dr. Horn (Trans. Am. Ent. Soc., Vol. VII., p 37), but differs by its smaller size, 17 mm., and by having head, legs, and fork-like appendage of last segment rufous; the middle part of the first antennal joint and the tips of the three others are transparent, whitish-yellow, and the dark parts are furnished with short hairs; the tip of the first maxillar joint is furnished on the inner side with a small spine; the black scutes of the dorsal abdominal segments are narrower than those of dilatatus, so that the larva shows much more white; the larger transverse plates of the ventral segments are formed somewhat differently.

F. G. SCHAUPP.

Pupa of Dicaelus elongatus, *Dej.*

The larva undergoes its transformation during the day-time, and the pupa is entirely white, 10 mm. long, and presents very little worthy of special mention. The labrum is of an elongate triangular form and extends to the tips of the mandibles, and is apparently composed of two parts, a transverse basal portion which is the true labrum, and the triangular apex which disappears with the pupa skin. The palpi are also very elongate and the ligula prolonged.

After six days the eyes of the pupa become dark, then the mouthparts brown, and after ten days the imago develops fully.

It remains two days white, and becomes black at the end of the twelfth day.

Larva found.	Transf. into pupa.	Imago developed.
Aug. 7th.	Aug. 9th.	Aug. 19th.
Aug. 12th.	Aug. 15th.	Aug. 25th.
Aug. 13th.	Aug. 17th.	

Larva of Dicaelus politus.

So closely resembling that of Dicaelus elongatus, that I can see no differences, except that the antennæ and legs are dark, nearly black.

Pupa also very similar.

I found a specimen Aug. 25th, that transformed into pupa Aug. 30th, and the imago developed Sept. 7th.

Two other similar larva died.

The larva of Dicaelus dilatatus is, while young, grayish-black above, and somewhat lighter gray beneath so that the seven black marks of the ventral segments are visible only by close inspection. By growing larger, this gray changes into white.

F. G. SCHAUPP.

During my stay in Fla. I observed that the larvæ of **Catocala fratercula,** *G. & R.* (C. atarah, Strecker) live on live oak, remain in pupa state two weeks; the larvæ of **ultronia** *Guen.* live on wild cherry. Of **C. Sappho** *Strecker* I collected fifteen specimens; the first appeared at the end of April.

Cicindela marginata *Fab.* was found near a creek on a meadow, end of June, **C. gratiosa** *Guer.* six miles south of Tallahassee in pine woods, end of May rare, and common in June, intermingled with **C. abdominalis** *Fab.* and **punctulata** *Fab.*

A KOEBELE.

NEBRIA, *Latr.*

Middle sized species, having the maxillae armed beneath with bristles. They live under stones, etc., near rivers, and brooks, in Northern regions or in high altitudes. Horn classifies them (Trans. Am. Ent. Soc., III., p. 98.):

- **A.**—Humeri of elytra obliterated; body either apterous or feebly winged.
  - Hind angles of thorax rectangular.
    - Side margin of prothorax very narrow, color black. **1. ingens.**
    - Side margin of prothorax wider, color brown. **2. ovipennis.**
  - Hind angles of prothorax not retangular; sides oblique: color livid. **3. diversa.**
- **B.**—Humeri of elytra distinct, at least moderately prominent.
  - Sides of elytra sub-parallel.
    - *Metallic Species.*
      - Sides of thorax oblique, hind angles not rectangular; color bluish metallic; dors. punct. faint or wanting. **4 virescens.**
      - Sides of thorax strongly sinuate, angles rectangular.
        - Elytra elongate, much longer than twice the width at base; slightly broader behind the middle.
          - Color purple; 3rd, 5th, and 7th, interstices with two or three punctures. **5. purpurata.**
          - Color piceous black, with tinge of green, 3rd stria with five or six small punctures. **6. gregaria.**
        - Elytra broader, sub-parallel, not longer than twice the width at base.
          - Antennae and legs black.
        - Elytra broad, depressed, deeply striate, dors. punct. very distinct. **7. metallica.**
        - Elytra more elongate and convex, striæ and punct. faint. **8. Gebleri.**
          - Antennæ and legs rufous or rufo-piceous. Four or five strong punctures on third interval. **9. viridis.**
    - *Black Species.*
      - Sides of thorax oblique, not sinuate near the base.
        - Antennæ and legs brown **10. obtusa.**
        - Antennæ and legs black.
          - Elytra rather broad, parallel on the sides, 3rd stria with one dorsal puncture. **11. obliqua.**
          - Elytra narrower, with several dorsal punctures on the third interspace,
            - Elytra obovate, wider behind, striæ faint. **12. longula.**
            - Elytra parallel, striæ deeper. **13. suturalis.**
      - Sides of thorax sinuate, hind angles rectangular.
        - Hind angles scarcely rectangular, dors. punct. faint. **14. hudsonica.**
        - Hind angles rectangular, dors. punct. distinct. **15. Sahlbergi.**
        - Hind angles rectangular, dorsal punctures of third and fifth intervals equally distinct and deep; femora rufous. **16. bifaria.**
  - Sides of elytra strongly arcuate.
    - Legs black.
      - Hind angles of thorax very distinctly rectangular.
        - Interspaces 3rd, 5th, and 7th, interrupted with large punctures. **17. trifaria.**
        - Interspaces 3rd, 5th, and 7th, with a few small punctures. **18. Rathvoni.**
      - Hind angles scarcely rectangular. **19. Mannerheimii.**
    - Legs pale.
      - Hind angles of thorax rectangular. **20. Eschscholtzii.**
      - Hind angles not rectangular, sides of thorax oblique. **21. pallipes.**

1 *N. ingens, Horn. Tr. Am. Ent. Soc. III.* 1870. *p.* 98. *Length* 14–16 *mm. Sierra Nevada, Cal.*!

2. *ovipennis, Lec. Bull. U. S. Geolog. Survey. IV. n.* 2. 1878. *p.* 477. *Length* 11.5 *mm. Sierra Nev. Cal.*

3. *diversa, Lec.*! *List. Col. N. A.* 1863. *p.* 2. *Length* 10–11 *mm. Or.* livida. *Lec. Proc Phil* 1859, p. 8.

4. *virescens Chd. ined.* (*Horn, Tr. Am. Ent. Soc. III. p.* 100). *Length* 12 *mm. Vanc. I., Wash. Terr.*

5. *purpurata, Lec.*! *Bull. U. S. Geolog. Survey. IV. n.* 2. 1878. *p.* 477. *Length* 12.5 *mm. Col.*

6. *gregaria, Fischer. Ent. Russ. I.* 72. *pl.* 6. *fig.* 2 ; *Esch .Mem. Mosc.* 1823. *IV. p.* 101.! *Length* 11.5 *mm. Alaska.*

7. *metallica, Fischer. Ent. Russ. I.* 71. *pl.* 6. *fig.* 1 ; *Esch. Mem. Mosc.* 1823. *IV. p.* 100. *Length* 12–14.5 *mm. Alaska., Cal.*

8. *Gebleri, Dej. Spec.* V. 573. *Esch. Zool. Atl. V. p.* 23. *pl.* 25. *fig.* 3. *Length* 10 *mm. Alaska.*

9. *viridis, Horn. Tr. Am. Ent. Soc. III.* 1870. *p.* 101. *Length* 7–8 *mm. Alaska, Wash. Terr.*

10. *obtusa, Lec. Bull. U. S. Geolog. Survey. IV. n.* 2. 1878. *p.* 478. *Length* 11 *mm. Wyoming.*

11. *obliqua, Lec. Proc. Ac. Phil.* 1866. *p.* 363. *Length* 11 *mm. Col.*

12. *longula, Lec. Bull. U. S. Geolog. Survey. IV. n.* 2. 1878. *p.* 478. *Length* 9 *mm. Col.*

13. *suturalis, Lec. Agass. L. Sup. p.* 209. *Length* 10–11.5 *mm. L. Sup., N. H.*

14. *hudsonica, Lec. New spec. p.* 3. *Length* 10–10.5 *mm. Hudson Bay Terr.*

15. *Sahlbergi, Fischer. Ent. Russ. III. p.* 254. *pl.* 14, *fig.* 4. *Esch. Zool. Atl.* 1833, *p.* 23 ; *castanipes, Kirby. N. Z. IV. p.*20. *moesta* (*var.*) *Lec. Agass. Lake Sup. p.* 209. *Length* 10 *mm. Or. Alaska, N. H.*

16, *bifaria, Mann. Bull. Mosc.* 1853. *III. p.* 128. *Length* 10 *mm. Alaska.*

17. *trifaria, Lec. Bull. U. S. Geolog. Survey. IV. n.* 2. 1878. *p.* 478. *Length* 13 *mm. Utah.*

18. *Rathvoni, Lec. Tr. Am. Phil. Soc. X.* 400. *Length* 12 *mm. Cal.*

19. *Mannerheimii, Fischer. Ent. Russ. III.* 253. *pl.* 14. *fig.* 5. *Esch. Zool. Atl.*, 1833. *p.* 23. *Length* 11–12 *mm.*

20 *Eschscholtzii, Men. Bull. Ac. Petrop. II.* 1844. *p.* 55 ; *castanipes, Lec. List Col. N. A. p.* 2. *Length* 10–11.5 *mm. Or. Cal.*

21. *pallipes, Say. Tr. Am. Phil. Soc. II. p.* 78. *Length* 10–11.5 *mm. North East of U. S.*

The two following are said to have been found on our shores :

N. carbonaria, Esch. Zool. Atl. V. p. 24. *Kamtschatka, Sitka.*
N. nivalis, Payk. Fauna. Suec. p. 119. *Lapland, Greenland.*

The two following are unknown and unrecognizable, but said to be black and resemble Sahlbergi. var. moesta and are about the size of viridis.

N. elias, Motsch. Bull. Mosc. 1865. *IV. p.* 276.
N. mollis, Motsch. ib. p. 274.

From Dr. Leconte's table of Nebria (see Bull. U. S. Geological Survey Vol. IV. No. 2. page 473 ff.) we give below a condensed sketch of the groups.

- Rows of ambulatorial setæ * double.
  - Humeri wanting. Group I. [contains of the above species No. 1. 2. 3.]
  - Humeri indistinct, rounded.
    - Elytra elongate oval. Group II [5. 17. 18. and N. carbonaria].
    - Elytra oval, prothoracic side-margin narrow. Group III. [19. 20].
  - Humeri distinct, elytra truncate at base, prothoracic side-margin wide. Group IV.[10. 11. 12. 13.—14. 15. nivalis 9. 6.—7. 8. 17.]
- Rows of ambulatorial setae* single.
  - Prothorax moderately narrowed behind. Group V.(4.)
  - Prothorax very much narrowed behind. Group VI.(21.)

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* Setigerous punctures of the ventral segments.

NEW PUBLICATIONS

The following new Species of Coleoptera have been described in the paper mentioned in our last Bulletin : Coleoptera of Fla. and Mich. by Hubbard and Schwarz. etc.

New Species from Fla.

Described by E. A. Schwarz.

Lebia rhodopus, Apenes angustata, Cyclonotum palmarum, Sacium mollinum, S. splendens, Scydmænus divisus, Languria marginipennis, Tomarus hirtellus, Lathropus pictus, Læmophloeus chamæropis, Nemicelus microphthalmus, Philothermus puberulus, Olibrus princeps, Brachyacantha querceti, Hyperaspis paludicola, Strigoderma exigua, Taphrocerus puncticollis, Brachys fascifera, Pachyscelus cæruleus, Temnopsophus impressus, Eupactus viticola, Metachroma maculipenne, Chrysomela cephalanthi, Systena pallipes, Epitrix brevis, Chaetocnema crenulata, Ch. quadricollis, Microrhopala floridana, Strongylium anthrax, Hymenorus dorsalis, Isomira valida, Xylophilus quericola, X. ptinoides, Glipa hieroglyphica.

Described by Dr. Leconte.

Species from Fla. when no other locality is given.

Dyschirius falciger, Onota (**new**) trivittata, Platynus floridanus, Pl. texanus, *Tex.* Loxandrus reflexus, L. calathinus, L. floridanus, L. rectangulus, Selenophorus excisus, Hydrophorus seminulum, Dineutes angulatus, Ochtebius discretus, *Cal.*, O. rectus, *Cal.*, O. attritus, O. simplex, O. tuberculatus, *N. M.*, O. lævipennis, *Cal.*, O. foveicollis, O. benefossus, *N. J.*, O. sculptus, *Cal.*, Rhinoscepsis **n. g.** bistriatus, Rhexius substriatus, Trimium convexulum, *Fla. Ill. Tenn.*, T. californicum, *Cal.*, T. puncticolle, *Ariz.*, T. simplex, T. discolor, *La.*, T. foveicolle, *Mass.* Euplectus debilis, E. tenuis, E. integer *Mich.*, E. cavicollis, Acylophorus densus, A. flavipes, Quedius ferox, *Fla. La. Can. Mass.* Qu. vernix, *Mass. Mich. Can.* Cryptobium floridanum, C. texanum, *Tex.*, C. californicum, *Cal.*, C. flavicorne, *Mass. L. Sup.*, C. tumidum, *Cal.*, C. prospiciens, *Tex. Ariz.*, C. lugubre, C. obliquum, C. parcum, C. lepidum, *Tex.* Pæderus obliteratus, Palaminus flavipennis, P. normalis, *Ga. S. C.*, P. contortus, P. cribratus, P. pumilus, Brachypeplus glaber, Smicrips **n. g.** palmicola, Scymnus balteatus, S. quadritæniatus, Oeneis pallida, Pentilia misella, *L. Sup. Fla. Ill. N. Y.*, P. marginata, *L. S.*, P. ovalis, Saprinus permixtus, Acritus salinus, Geotrypes chalybæus, Diplotaxis languida, Anomala semilivida, Taphrocerus lævicollis, Nematodes punctatus, Anchastus longulus, A. fuscus, A. asper, Athous debilis, Cyphon impressus, Lucidota luteicollis, Photinus ecostatus, P. nitidiventris, P. punctiventris, *Tex.*, P. collustrans, P. umbratus, Ozognathus floridanus, Hemiptychus debilis, H. similis, H. abbreviatus, H. auctus, Catorama punctulata, C. holosericea, C. minuta, C. frontalis, *Cal.*, C. sectans, *Tex.*, C. obsoleta, *Cal.* Dorcatoma granum, D. tristriatum, *Tex.* Cænocara lateralis, C. intermedia, *N. C.*, C. californica, *Cal.* Byrrhodes **n. g.** setosus, Elaphidium tectum. Leptostylus arcuatus, Zaplous **n. g.** Hubbardi, Donacia rugosa, Diabrotica vincta, Oedionychis indigoptera, Argopistes scyrtoides, Sphærderma opima, *N. C. Tex.* Chætocnema pinguis, C. protensa *Mich.*, C. cylindrica, *Mich. Mass.*, C. opacula *Cal.*, C. flavicornis *Mich.*, C. obesula, C. decipiens *Ks.*, C. cribrata *Mass.* ; Blapstinus fortis, B. opacus, B. estriatus ; Dignamptus **n. g.** stenochinus, D. langurinus, Phaleria punctipes, Platydema crenatum, Hypophlœus glaber, H. piliger *Fla. Ga. N. C.*, H. substriatus *Or.*, H. opaculus *S. Cal.*, H. tenuis *Mass.*. Strongylium simplicolle, Xylophilus nubifer, Dircæa prona, Mordella fascifera, M. angulata. M. jovialis *Tex.*, M obliqua *Md. Mich.* Conotrachelus ventralis, C. cognatus, C. pusillus, C. coronatus, Acalles ventrosus, A. subhispidus, Cryptorhynchus helvus. Barilepton bivittatum *Ga. Fla.* Sphenophorus apicalis, Mesites rufipennis, Pityophthorus obliquus, P. seriatus, Cryphalus miles, Euxenus piceus.

Species from Detroit and Lake Superior when no other locality is given.

Dyschirius brevispinus, Badister obtusus, Bembidium arcuatum, B. versutum, Hydroporus laccophilinus, Suphis semipunctatus. Laccophilus pumilio, Gaurodytes leptapsis, G. longulus, Hydrobius feminalis, H. castaneus *Cal.*, H. cuspidatus *Cal.* Habrocerus? magnus, Agathidium globatile, A. parvulum, Batrisus simplex, Orthoperus scutellaris, O. suturalis *Fla.*, O. elongatus *Fla.* Lathridius opaculus *Mich. Ills. Mass. Md.*, L. maculatus, L. duplicatus, L. tenuicornis *Cal.*, L. laticollis, Odontosphindus n. g. denticollis, Eurysphindus n. g. hirtus, Mycetophagus confusus* *Col.*. M. tenuifasciatus. **N. H. Mich. Col.*, M. californicus **Cal.* Diplocœlus angusticollis*, Rhizophagus brunneus*, Pedilophorus subcanus, Paromalus teres, Hetærius Blanchardi *Mass.* Aegialia rufa. A. latispina *Cal.*, A. spissipes, Phausis inaccensa, Xyletinus lugubris *L. S. Mass. Nebr.*, X. pubescens *Tex.* Micromalthus n. g. debilis, Phymatodes maculicollis, Typocerus sparsus, Chlamys cribripennis, Phyllotreta robusta, Chætocnema rudis, Mycetochares gracilis. M. pubipennis *Cal.*, M. laticllis, *Pa.*, M. analis, M. lugubris, M. marginata, M. longula, Canifa pallipennis. Dircaea fusca. Hallomenus serricornis, Orchestes canus* *Mich.*, *Col.*. O. mitus* *Cal.*, Zygobaris subcalva, Pityophthorus annectens *Fla.*, P. consimilis, P. hirticeps, P. pusio, P. opaculus, Xyleborus punctipennis, Xylocleptes decipiens, Tomicus balsameus *N. Y.* Micracis opacicollis, M. asperulus, Choragus Harrisii.

* Species named by Dr. Horn.

H. Strecker's Catalogue of N. A. Butterflies received.

It is just what beginners want and is indispensible to those further advanced. For the beginner it contains full instructions for collecting, breeding, preparing etc., a plate showing the structure of butterflies and the scientific terms and abbreviations used in works on Lepidoptera; for the more advanced it contains an exceedingly rich synonymy; and for both interesting biographical notes on the authors, their works cited etc.

We heartily recommend the work to our Readers.

Acquisitions of Rare Lepidoptera.

During this year I received from Colorado, a specimen of the rare Sphinx sequoiæ *Boisd.* as far as I know the only specimen thus far represented in any N. A. collection.

From Florida I received a specimen of Daremma catalpa *Boisd.* kindly determined for me by my friend Prof. A. R. Grote.

From the last named locality I also received a specimen of the Catocala sappho *Strecker*, a most beautiful species.

EDW. L. GRAEF.

BULLETIN

—OF THE—

Brooklyn Entomological Society.

BROOKLYN, OCT. 1878.

To the Coleopterists and Lepidopterists of the United States.

The principal aims of the Bulletin are:

1. To give Synoptic Tables of the N. A. Coleoptera and Lepidoptera.

The descriptions of the N. A. species have been published in widely scattered papers in England, Germany, France, Russia, Holland, Belgium, Sweden, Italy, etc. It is almost impossible to obtain all these descriptions, or even those that have appeared during the last twenty-five years in this country. It would appear, therefore, to be a valuable and meritorious work to give these Synoptic tables, particularly as in very many instances the size and locality of a species will enable a collector to determine it.

2. To pay special attention to the early stages of our Coleopterous and Lepidopterous species.

The student of this part of entomology will find it more remunerative and interesting than any other, and our *Bulletin* has shown in several instances that the Lepidopterists are further advanced than the Coleopterists in this direction.

3. To present a medium wherein collectors can exchange their experiences, and to afford opportunities for the exchange of duplicate specimens. Many collectors have a greater or less number of fine duplicates, which they might exchange for desirable rare species by offering them in our paper at a cost of 25 cents.

The price of the *Bulletin* is so low (60 cents for 12 monthly numbers), that every collector of Coleoptera and Lepidoptera can afford to subscribe for it in view of its many advantages, and particularly of its Synoptic tables, which begin in No. 1.

The Publication Committee.

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Will pay good prices for Nos. (Crotch's check list) 3205. 3206, 3207a-3209, 3210, 3211, 3214. Also wanted Scarabæidæ in exchange.

I desire to get by exchange or purchase new N. A. Arctians to my collection. Please send list of duplicates. Also wanted Smerinthus astylus, male and female, for which I will give a perfect pair (ex larva) Platysamia, Gloverii, *Strecker*.

EDW. L. GRAEF., 40 Court Str., Brooklyn, E. D., N. Y.

H. SCHMELTER.

44 St. Marks place. New York,

Wants in exchange or by purchase Cryptocephalidæ of Mexico and the West Indian Islands. Also the following species of our fauna [Nos. according to Crotch's check list], 5584, 5585b, 5586, 5591, 5594, 5600, 5605, 5607, 5608, 5618, 5619, 5621, 5622. Also Cryptoc. nigerrimus Cr., insertus Hald., lixus Newm., punctipes Say., quadrifrons Newm.

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I have returned from my fourth annual collecting trip to **Nevada**, with a fine series of Insects of all orders and more particularly Coleoptera and Lepidoptera. I have also a good many good things from my trips to **Colorado** and **Georgia** and from other parts of the Country,

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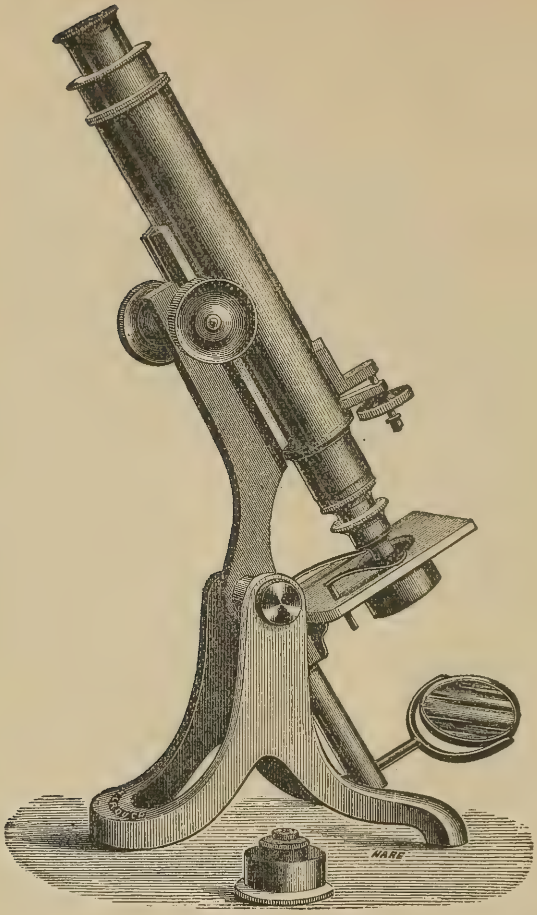

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BULLETIN.

—OF THE—

Brooklyn Entomological Society.

BROOKLYN, NOV. 1878. No. 7.

NOTES

ON

Syneda *Gue.*, Leucanitis *Gue.*, and Bolina *Dup.*

We have in the United States a number of species which we include in the above named genera, but which should be, in my opinion, comprised in the genus Leucanitis *Gue.*

Mr. Grote separates from the genus Syneda two species– S. deducta *Morr.* and S. incandescens *Grote*, and creates for them the new genus, Cirrhobolina.

I consider S. deducta to be a true Syneda (Leucanitis) being very close to Graphica *Hubn.*,—and S. incandescens I take to be only a variety of the first named. differing from it only slightly in the ornamentation of its primaries which difference is (somewhat less marked) also in S. graphica.

One species of Bolina occurs in Europe? (Amur Region) viz: B. flavomaculata, *Brem.*; but it is so very rare that even Dr. Staudinger states in his Catalogue that it is not represented in his cabinet, and I very much doubt if any N. A. Collector has ever seen a representative of the Genus Bolina.

Mr. Grote in his "Check List p. 40 states–"the type of Bolina is the European Cailino etc.," now Lederer (Noctuinen Europas p. 199) and Dr. Staudinger (Catalog der Lepidopteren des Europæ Faunengebiets p. 136) both put Cailino *Hubn.* in the Genus Leucanitis.

I have in my collection two species of Leucanitis from Europe, viz: L. Stolida *Fab.*, and S. cingularis *Hubn.*, the first named closely allied to L. limbolaris *Geyer*, and the other nearer to nigrescens *G.* and *R.* of which last named ochreipennis *Harvey* is only a variety. From general appearances Cingularis and Stolida are farther separated from each other than they are from any of our N. A. species.

As I have already remarked, I consider deducta a true Syneda (Leucanitis), and granting this, I can see no reason for separating this species from that next to it–pallescens *G.* and *R.*

S. deducta is the connecting link between the two groups.

The great differences in size of the species I propose to combine in one genus cannot be of any objection, for in a closely allied genus (Catocala) we have this in a still greater degree. Take for instance Catocala amatrix *Hubn.* and C. minuta *Edw.* What a difference in size is there; but who would think of separating these species generically?!

I propose to have our species stand as follows:

Leucanitis *Gue.*

(Syneda *Gue.* Bolina *Dup.*)

	Leucanitis	graphica *Hubn.*	Atlantic States
	"	divergens *Behr.*	Colorado
	"	adumbrata "	Arizona
	"	Howlandii *Grote.*	"
	"	ingeniculata *Morr.*	Texas
*	"	hudsonica *G. & R.*	
*	"	socia *Behr.*	Calfornia
*	"	ochracea "	"
*	"	Edwardsii "	"
*	"	tejonica "	"
*	"	nubicola "	"
*	"	maculosa "	"
	"	deducta *Morr.*	Texas
		var. incandescens *Grote.*	"
	"	jucunda *Hubn.*	"
	"	limbolaris *Geyer.*	Atlantic States
	"	pallescens *Gr.* and *R.*	Texas
	"	nigrescens "	"
		var. ochreipennis *Harvey.*	"
*	"	fasciolaris *Hubn.*	
*	"	hadeniformis *Behr.*	California

The species marked with a * I have not seen in nature.

EDW. L. GRAEF

COLEOPTERA OF THE NEIGHBORHOOD OF NEW YORK.

CHRYSOMELIDÆ.

- Donacia. *Fabr.*
  - lucida. *Lac.*
  - distincta. *Lec.*
  - subtilis, *Kunze.*
- Haemonia. *Latr.*
  - Melsheimeri. *Lac.*
- Syneta. *Lac.*
  - ferruginea. *Germ.*
- Lema. *Fab,*
  - brunnicollis. *Lac.*
  - trilineata. *Oliv.*
- Crioceris, *Geoffr.*
  - asparagi, *Linn.*
- Chlamys. *Knoch.*
  - plicata, *Fabr.*
- Exema, *Lac.*
  - gibbera, *Fabr.*
- Monachus. *Suffrian.*
  - saponatus, *Fabr.*
- Cryptocephalus, *Geoff.*
  - venustus, *Fabr.*
    - var. aulicus, *Hald.*
    - “ simplex, *Hald.*
  - flaccidus. *Suffr.*
  - calidus. *Suffr.*
  - incertus, *Oliv.*
  - sellatus. *Suffr.*
  - mammifer. *Newm.*
  - 4-maculatus. *Say,*
  - quadruplex, *Suffr.*
  - guttulatus, *Oliv.*
  - dispersus, *Hald.*
  - auratus, *Fabr.*
- Pachybrachys, *Chev.*
  - M-nigrum, *Mels.*
  - luridus, *Fabr.*
  - atomarius, *Mels.*
  - femoratus, *Oliv.*
  - litigiosus. *Suffr.*
  - othonus. *Say.*
  - hepaticus. *Mels.*
- Fidia. *Baly.*
  - murina, *Cr.*
- Xanthonia, *Baly.*
  - 10-notata *Say.*
  - villosula. *Mels.*
- Heteraspis. *Chev.*
  - pubescens, *Mels.*
  - curtipennis, *Mels.*
- Chrysochus, *Chev.*
  - auratus. *Fabr.*
- Typophorus, *Chev.*
  - tricolor, *Fabr.*
- Chalcoparia, *Cr.*
  - globosa, *Oliv.*
- Paria, *Lec.*
  - 6-notata, *Say.*
  - 4-guttata, *Lec.*
  - 4-notata. *Say.*
  - aterrima, *Oliv.*
- Colaspis, *Fabr,*
  - brunnea, *Fabr.*
  - praetexta, *Say.*
  - tristis, *Oliv.*
- Chrysomela, *Linn.*
  - clivicollis, *Kirby.*
  - 10-lineata, *Say.*
  - suturalis, *Fabr.*
  - similis, *Rog.*
  - elegans, *Oliv.*
  - lunata, *Fabr.*
  - multiguttis, *Stal.*
  - philadelphica, *Linn.*
- Gastrophysa, *Chev.*
  - polygoni, *Linn.*
  - cyanea, *Mels.*
- Prasocuris, *Latr.*
  - varipes, *Cr.*
  - obliquata, *Cr.*
- Cerotoma, *Chevr.*
  - caminea, *Fabr.*
- Phyllobrotica, *Redt.*
  - discoidea, *Fabr.*
- Diabrotica, *Chev.*
  - 12 punctata, *Oliv.*
  - vittata, *Fabr,*
- Galeruca, *Groffr.*
  - americana. *Fabr.*
  - cribrata, *Lec.*
  - rufosanguinea, *Say.*
- Galerucella, *Cr.*
  - notata, *Fabr.*
  - maritima, *Lec.*
- Trirhabda. *Lec.*
  - canadensis, *Kirby.*
- Œdionychis, *Latr.*
  - vians, *Ill.*
  - thoracica, *Fabr.*
  - thyamoides, *Cr.*
- Disonycha, *Chev.*
  - pallipes, *Cr.*
  - punctigera, *Lec.*
  - pensylvanica, *Ill.*
  - abbreviata, *Mels.*
  - collaris, *Fabr.*
  - collata, *Fabr.*
- Graptodera, *Chev.*
  - ignita, *Ill.*
- Orchestris, *Kirby.*
  - vittata, *Fabr.*
- Dibolia, *Chev.*
  - aerea, *Mels.*
- Systena, *Chev.*
  - hudsonias, *Forst.*
  - elongata, *Fabr.*
- Crepidodera, *Chev.*
  - Helxines, *Linn.*
  - atriventris, *Mels.*
- Epitrix, *Foud.*
  - cucumeris, *Harr.*
- Chaetocnema, *Steph.*
  - denticulata, *Ill.*
- Blepharida, *Chev.*
  - rhois, *Forst.*
- Stenispa, *Baly.*
  - metallica, *Fabr.*
- Odontota, *Chev.*
  - scapularis, *Oliv.*
  - notata, *Oliv.*
  - scutellaris, *Oliv.*
  - rosea. *Web.*
  - inaequalis. *Web.*
- Microrhopala, *Chev.*
  - vittata. *Fabr.*
- Chelimorpha, *Chev.*
  - cassidea, *Fabr.*
- Coptocycla, *Chev.*
  - aurichalcea, *Fab.*
  - guttata, *Oliv.*
  - bisignata, *Boh.*

H. SCHMELTER.

On Distinguishing some of our more Common Cicindelae.

Cic repanda, 12 guttata, vulgaris and hirticollis have always proved puzzling to beginners. Now, besides their specific character there is another good way to distinguish these four species, viz., by the humeral lunule.

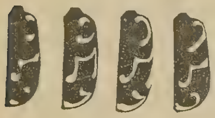

Fig. 7. *a*, Cic repanda has for the humeral lunule a regular c.

b, Cic hirticollis has the posterior end of the c bent upwards.

c, Cic vulgaris has the same end bent downwards.

d, Cic 12 guttata with its varieties oregona and guttifera has instead of the humeral c only the two ends of this letter

The middle fascia, the apical lunule, and the marginal marking may vary ; but the humeral lunule is constant.

F. G SCHAUPP

Until recently *Cucujus clavipes* has been considered quite rare in this locality. Within the past few weeks, however, it has been discovered in its several stages in great abundance beneath the bark of decayed buckeye and white-poplar trees. The larva is elongate quite depressed, and of a yellowish brown tint. Preparatory to pupation it constructs a slight cell from minute particles of the damp bark, in which it undergoes its further transformations. When full grown the larva is about 23 m.m. in length. The pupa is of a whitish color and considerably flattened. Before the imergence of the imago, the antennae. eyes, and portions of the legs turn black. Length about 14 m.m. Imago with head, thorax, elytra and femora, at first white, but in a day or two gradually assuming their characteristic red color.

Cincinnati, O. HAROLD B WILSON.

Omophron robustum, *Horn*, Coptodera aerata, *Dej.*, and Dacne Ulkei, *Cr.*, were captured somewhat abundantly this season near Cincinnati, Ohio.

CHAS. DURY.

Genus Pieris, *Schr'k.*

(Continued.)

Pieris Sisymbri, *B'dvl.* Female, wings white; primaries with six elongated black spots on the exterior margin, a black patch borderingon the discoidal cell and approaching the anterior margin, and three or four irregular discal patches of black; secondaries pure white; the veins on the underside of the secondaries are yellow and heavily bordered with black. Expands one and three-eighth inches.—California, Colorado.

Pieris Protodice, *B'dvl.* Male, wings white; primaries with a black patch near the discoidal cell as in Sisymbri, but larger and with a whitish line in the centre; apex slightly black with from one to four black discal spots, often very indistinct; secondaries pure white; the underside of secondaries generally with zigzag markings of an olive tint, but sometimes pure white. The female has the black markings on the primaries more intense; the secondaries are white with the veins grayish, and a border of triangular black patches along the exterior margin. Expands from one and three-quarters to one andseven-eighth inches.—U. S.

Variety Vernalis, W. H. Edwards, is the spring form of Protodice and somewhat smaller.

Varieties Occidentalis, Reak., and Calyce, W. H. Edwards, are western forms.

Pieris Beckeri, *W. H. Edwards.* Form and size of Protodice, to which it is very closely allied; the cellular spot on primaries larger, rhomboidal; the black spots along the outer margin are disconnected; the underside of secondaries are more heavily marked.—Utah, Nevada, Arizona.

Pieris Napi, *Linn.* Variety Venosa, Scudder. Wings white, black at base extending along part of the anterior margin, the veins on primaries widening towards the exterior margin into triangular patches of black, heaviest near the apex; a single black discal spot, Expands one and three-quarters to one and seven-eighth inches.—Californa.

Pieris Napi, *Linn.* Variety castoria, Reak. Like the above, but can be distinguished by the absence of the black markings at the base and the apex; discal spot very indistinct. Expands one and three-quarters to one and seven-eighth inches.—California.

Pieris Napi, *Linn.* Varieties Frigida, Scudder; and Oleracea, B'dvl. Same as castoria with the absence of all black markings, except that Frigida has the veins on the underside of secondaries heavily marked with black. Expands one and three-quarters to two inches.—Habitat of Oleracea, U. S. of Frigida, Labrador and Anticosti Islands.

Pieris Rapae, *Linn.* Male, pure white with black tips and black discal spot on primaries; secondaries white with a black spot bordering on the anterior margin; underside of secondaries and tips of anteriors light lemon color. Expands one and five-eighth to one and seven-eighth inches.—U. S.

Pieris Rapae, *Linn.* Variety Novangliæ, Scudder. Male, entirely lemon yellow.

GENUS ANTHOCHARIS, *B'dvl.*

This genus approaches closely to Pieris, but has generally an auroral spot near the summit of the primaries; the antennæ are rather shorter; club heavier.

GROUP I.

Anthocharis Ausonides, *B'dvl.* Wings white, black at base; primaries with a black cellular spot, and tips black with a white patch bordering on the anterior margin and two small spots near the exterior margin; the same markings appear on the underside subdued and with a greenish tinge; the underside of secondaries white, marbled with olive. Expands one and one-half to one and five-eighth inches.—Colorado, California.

Anthocharis Creusa, *Dbldy.* Slightly smaller than the above; cellular spot much larger, rhomboidal; the underside of secondaries with a silvery gloss and more heavily marbled.—Colorado, California.

Anthocharis Olympia, *W. H. Edw'ds.* Wings white; primaries with a black cellular spot and slight black markings towards the apex; the olive markings on the underside of secondaries are slighter than in the preceding species, and the anterior margin with a slight shade of pink. Expands one and one-quarter inches.—West Virginia, Western States.

Anthocharis Sara, *B'dvl.* (Reakirtii, W. H. Edw'ds.) Wings white, black at base; primaries of male with a large bright red apical patch bordered with black, except at the interior margin; secondaries pure white with slight black spots on the veins at the exterior margin; underside of anteriors white, the red patch shows through, though paler and bordered with light yellow at the apex; underside of secondaries white, finely penciled with black; veins orange. Female same as male, but the apex and part of the exterior margin on upperside pale yellow. Expands one and three-eighth to one and three-quarter inches.—Pacific States.

Anthocharis Julia, *W. H. Edw'ds.* Male close to the above, but smaller and black borders more prominent; secondaries pure white; the olive markings on underside of secondaries very heavy. Female, ground color yellow. Expands one and one-third inches.—Colorado.

Anthocharis Cethura, *Felder.* Male, wings white with yellow tinge, black at base, sub-apical patch of primaries pale orange as in female Sara; female, wings same color as in male with the orange patch on primaries wanting; markings on underside of secondaries slighter than in Sara, but more greenish. Expands about one and one-half inches.—Southern California.

GROUP II. (Midea. H. Sch.) Anterior wings falcate.

Anthocharis Genutia, *Fabr.* Male, wings upperside white, black at base; primaries with an orange apical patch bordered outwardly with black, and a black discal spot; underside of primaries white, the tips and the whole of the secondaries delicately marbled with gray and black. Expands one and one-half to one and five-eighth inches.—U. S.

ARCTIA VIRGO.

For the last six years I collected during the middle of July Arctia virgo and raised from the eggs, obtained from faded females, larvæ, which always hibernated in the larval state. This year I obtained about 50 larvæ, the greater part of which transformed into pupæ at the beginning of October and an imago—full size, perfect—developed October 16th, soon afterwards thirteen imagines appeared.

Some of the larvæ are—although of the same brood, only half grown.

F. G. SCHAUPP.

NEW PUBLICATIONS.

From the Proc. Cal. Ac. Sc., Dec. 17, 1877.

Henry Edwards, Pacific Coast Lepidoptera, No. 26, 27, 29, 30, desccribes the new species :

Argynnis Columbia, Lycaena Clara, Xanthotrix n. g. ranunculi, Thalpochares Arizonæ. Syneda Hastingsii, S. mirifica, Synedoida n. g. biformata, S. scrupulosa. Cirrhobolina tetrica.

Notes on the transformation of Thecla irioides, *Boisd.*, Cisthene nexa, *Streck.*, Saturnia mendocino, *Behrens*,* Acronycta spini, *Grote.*, Zotheca tranquilla, *Grote.*

Occurrence of some rare Diurnals in Cal.

Papilio indra, *Reak.*, Anthocharis Hyantis, *W. H. Edw.*, A. Cethura, *Feld.*, Midea lanceolata, *Boisd.*, Colias Barbara, *Hy. Edw.*, Polyommatus cupreus, *Boisd.*, Lycæna regia, *Bdv.*

Notes on the genus Parnassius. Sp.

Dimmocks special Bibliography No, 1. Contains the Entomological writings of John L. Leconte since 1844 till up to this day, compiled by S. Henshaw, Cambridge Nov. 78. It is a very meritorious work, and the Editor promised to bring also the writings of Dr. G. H. Horn, and those of S. H. Scudder.—

---

* *This species is first described by Mr Behrens under the above name, Can. Ent. VIII.*, 149.—*Grote.*

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BULLETIN.

—OF THE—

Brooklyn Entomological Society.

BROOKLYN, DEC. 1878. No. 8.

DESCRIPTION
OF A
NEW SPECIES OF CALOSOMA.

BY

J. L. LECONTE, M.D.

Calosoma simplex n. spec. Black, subopake. Head and prothorax finely rugose and punctulate, the latter more than twice as wide as long; sides strongly margined, rounded in front, oblique behind, more widely reflexed towards the base; base bisinuate, broadly rounded at the middle, hind angles distinctly prolonged, broadly rounded; basal impressions large and deep; dorsal line fine. Elytra slightly wider than the prothorax, oblong, oval, convex towards the sides, which are narrowly margined towards the base and more widely so along the sides; near the base are seen four small acute teeth, as in our allied species; striæ not impressed, composed of extremely fine punctures; the punctures of the three dorsal rows are also small and not conspicuous; interspaces alutaceous not distinctly rugose. Tibiæ straight.

Length 20.5 mm. Middle California, one male.

COLLECTING INSECTS IN WINTER.

Before the last cold days I collected on a fine afternoon very many coleoptera at the foot of a hill, among which were about 50 *Platynus lutulentus*—more than I captured in six years all together, some other common *Platynus*, as *extensicollis*, *decorus*, *melanarius*, *cupripennis*, *octopunctatus*, *placidus strigicollis*, some *Oodes*, *Anisodactylus*, *Scydmaenidae*, *Staphilinidae*, etc.

The greater part were sitting on the underside of the stones and were moving away very slowly, so that the capture is more easy than during spring and autumn.

F. G. SCHAUPP

ON THE NOMENCLATURE OF A FEW OF OUR BOMBYCIDS.

Among the North American Bombycids there are a few genera which are identical with those in Europe, but for which new genera have been erected here. The reasons for this are entirely groundless and can only tend to confuse a beginner who is studying both our fauna and that of Europe. In our studies and works I think it should be our aim to simplify matters as much as possible, instead of burdening the student with new names that are not required.

The genus **Clisiocampa**, Curtis, is represented in Europe by several species that are in every particular precisely like those of this genus, for instance *Bombyx Neustria, Linn.*, which is very close to our *Clisiocampa Sylvatica. Harris*, and *Bombyx Castrensis, Linn.* With the genus well defined and the European species agreeing entirely with ours, it certainly is quite superfluous to erect and adopt a new genus for the American species of the same group. I would therefore refer all of our species of **Clisiccampa** to the genus **Bombyx**, Boisd.

Gastrcpacha Americana, Harris. The name *Gastropacha, Ochs.* applies to a group of the Bombycids, which in Europe has been subdivided into several genera. The above species would come under the genus *Lasiocampa. Latr.* and is even identical with the European *Ilicifola, Linn.*. so that both the generic and specific names must fall and the species be known as **Lasiccampa Ilicifolia**, Linn.

Parorgyia, Pack. This genus I think should be refered to *Dasychira. Stephens.* It is true our *Parorgyians* are of rather slighter build in the male sex than the majority of the species of *Dasychira* of Europe, but the characteristics otherwise are the same, and the females of both bear a remarkable resemblance to each other. Both *Parorgyi*a and *Dasychira* are at best but a higher form of *Orgyia, Ochs.*, the larvæ give full evidence of this, and it would be but proper to combine the two. The male of *Dasychira selenitica. Esper* is slighter than others of that genus, and its proximity to *Orgyia* can easily be traced in its markings, the same as in our species of **Parorgyia**. I cannot therefore see why we should hold on to two generic names in this instance, and would propose to refer all of our species of **Parorgyia** to the genus **Dasychira**, Stephens.

The fauna of our Country bears such close relationship to that of Europe that I think it is but just that we should revise our nomenclature and endeavor to bring it a little more in harmony with that of Europe. It certainly looks strange to see species of the same genus in our collections bearing different generic names in their representatives from this country and from Europe, and a beginner, if he should acquire the species of such genera from both countries, can only be confused in his endeavors to establish in his mind what constitutes a GENUS.

FRED. TEPPER

NEBRIA and PELOPHILA appear to be sufficiently distinct to be retained apart.

Nebria.—Anterior tarsus of ♂ moderately or feebly dilated; antennæ slender, joints all cylindrical, equalling in length two-thirds or more the length of the body; scutellar stria of elytra always distinct.

Pelophila.—Anterior tarsus of ♂ broadly dilated; antennæ stout, shorter than half the length of the body, joints 3–4 thicker at tip, joints 3–11 distinctly flattened; scutellar stria obliterated; body robust, *Blethisa* form.

PELOPHILA, *Dej.*

Hind angles of the thorax rectangular; black, somewhat æneous. They also live in the high North under stones at the edge of the waters.

Horn classifies them (Trans. Am. Ent. Soc., III, p. 104) as follows:

Thorax one-half broader than long.
  Elytral striæ deep and coarsely punctured; third stria with 6–7 punctures; legs piceous.......................... **1. Eschscholtzii.**
  Elytral striæ replaced by lines of moderate coarse punctures, third stria with 4–5 punctures, interstices convex; legs black......... **2. rudis.**
Thorax twice as broad as long. Tibiæ brown, femora rufous; third stria with four punctures; interstices flat............................ **3. Ulkei.**

1. *P. Eschscholtzii*, *Mann.* Humm. Essais Ent. III, 40; Bull. Mosc., 1843, II, p. 190. Length 12 mm. Sitka, Methy.
2. *P. rudis*, *Lec.* (Nebr.) New Spec. 1863, I, p. 3. Methy.
3. *P. Ulkei*, *Horn.* Trans. Am. Ent. Soc., 1870, III, 105. Hudson Bay Terr.

The following is unknown:

P. californica, *Motsch.* Ins. Sib., p. 63.

LEISTUS, *Fröh.*

A small insect of brown color, having the maxillæ armed beneath with spines.

L. ferruginosus, *Mann.* Bull. Mosc., 1843, II, 187, *ferrugineus.* *Dej.* Spec., V, 569. Length 36 mm. Alaska to Oregon.

CALOSOMA, *Weber.*

Large species with mentum tooth simple and third joint of antennæ strongly compressed. They live under stones, etc.

Synoptic Table by Dr. J. L. Leconte.

Anterior tarsi of ♂ with joints 1–4 *hairy beneath.*

Thorax with sides broadly flattened behind; body elongate, black.

Elytra deeply striate, blue border......................**1. externum.**

Elytra smooth, with a few punctures on the basal half....**2. macrum.**

Elytra with series of fine punctures.................**3. protractum.**

Thorax narrowed behind, sides not flattened; elytra deeply striate.

Elytra gold green with red margin.

Larger; middle tibiæ of ♂ curved and with a dense brush of hairs on the inner surface near the tip......**4. scrutator.**

Smaller; middle tibiæ of ♂ straight, not hairy.......**5. Willcoxi.**

Elytra black, with three rows of small bronzed punctures..**6. frigidum.**

Anterior tarsi of ♂ with joints 1–2 *only hairy beneath.*

Thorax trisinuate behind, elytra deeply striate with three rows of golden foveæ...**7. Sayi.**

Anterior tarsi of ♂ with joints 1–3 *hairy beneath.*

* BLACK SPECIES without golden spots; striæ of elytra faint and obliterated behind (except in *angulatum*).

Elytra narrowly margined:

Side margin of thorax meets the base in a well-defined angle.

Head coarsely punctured, thorax strongly angulated at the sides.

Elytra deeply striate...........................**8. angulatum.**

Elytra faintly striate.......................**9. peregrinator.**

Head with a few coarse punctures in front.

Elytra with coarse transverse punctures near the base. **10. lugubre.**

Head finely rugose, not coarsely punctured.

Elytra with a few fine short transverse wrinkles near the base, **11. carbonatum.**

Head smooth; thorax narrowly margined.

Elytra nearly smooth, oval; wings feebly developed, **12. Palmeri.**

Side margin of thorax meets the base in a curve.

Thorax slightly bisinuate behind.

Basal impressions slight; elytra nearly smooth........**13. triste.**

Basal impressions broad, elytra with scaly sculpture, **14. obsoletum.**

Thorax emarginate behind, hind angles broad, prolonged.

Without lustre, sides of thorax regularly rounded..**15. semilæve.**

Without lustre, sides of thorax oblique behind. **16. simplex,** n. sp.

Elytra smooth, more broadly margined, oval; wings wanting, (form robust, nearly as in *triste*)...................................**17. Haydeni.**

* SLIGHTLY BRONZED SPECIES with rows of golden or coppery spots.

Thorax with broad basal impressions: elytral striæ regular. . **18. calidum.**

Thorax with small basal impressions: rougher, elytral striæ frequently confused and golden spots faint. **19. tepidum.**

* BRONZED SPECIES with three rows of chainlike elevations on the elytra, striæ confused.

Thorax less narrowed behind.

Basal impressions broad, wings well developed: elytra oblong-oval. **20. cancellatum.**

Basal impressions shallow; wings wanting; elytra oval, less deeply sculptured . . . . **21. subæneum.**

Thorax more narrowed behind, basal impressions small, wings wanting, elytra oval. . . . . **22. moniliatum.**

* BLACK SPECIES with oval or rounded oval elytra, and without wings; thorax emarginate behind with the angles produced.

Outer joints of antennæ pubescent as usual:

Elytra broadly oval, with rows of close-set punctures and intermediate rows of more distant punctures. . . . . **23. discors.**

Outer joints of antennæ pubescent only along the sides:

Elytra longer oval, striæ confused, with three dorsal rows of larger punctures. . . . . **24. Wilkesi.**

Elytra broadly oval, with distant rows of punctures: sculpture scaly, sometimes nearly smooth:

Hind angles of thorax not broadly rounded. . . . . **25. luxatum.**

Hind angles of thorax broadly rounded. . . . . **26. latipenne.**

1. *externum, Say.* Journ. Ac. Phil., III, 150.=*longipenne, Dej.* Length 30 mm. East., Middle, South. and Central States.
2. *macrum, Lec.* Trans. Am. Phil., X, 400. Length 27 mm. Texas.
3. *protractum, Lec.* Proc. Ac. Nat. Sci., 1862, p. 52. Length 22–25 mm. Arizona.
4. *scrutator, Fab.* Syst. Ent., I, 239. Length 30 mm. U. S. to Lower California.
5. *Willcoxi, Lec.* Ann. Lyc., IV, 446 Length 18 mm. Atl. & Central States.
6. *frigidum, Kirby.* Fauna. Am. Bor., IV, 19. Length 20 mm. North. States.
7. *Sayi, Dej.* Spec., II, 198. Length 25 mm. East and South States.
8. *angulatum, Chevr.* Col. Mex. Cent., I, No. 44. So. Cal. Length 27 mm.
9. *peregrinator, Guér.* Révue Zool., 1844, p. 255.=*prominens*, Lec., Trans. Am. Phil., X, 400.=*angulatum*, ‖ Lec , Ann. Lyc., V, 199. Length 30 mm. Arizona.
10. *lugubre, Lec.* Trans. Am. Phil., X, 400. Length 27 mm. Texas.
11. *carbonatum, Lec.* Proc. Ac. Nat. Sci., XIV, 53. Length 25 mm. New Mexico, Upper Texas, Arizona, Lower California.
12. *Palmeri, Horn.* Trans. Am. Ent. Soc., V, 199. Length 19 mm. Guadelupe Island, Cal.
13. *triste, Lec.* Proc. Bost. Soc., I, 201; Bost. Journ., V, t. 18, f. 9. Length 18 mm. Central States.
14. *obsoletum, Say.* Journ, Ac., III, 149.=*luxatum*, Dej. Spec., II, 96. Length 20 mm. Central States.
15. *semilæve, Lec.* Ann. Lyc., V, 199. Length 23 mm. Pacific States.
16. *simplex, Lec.* Bulletin Brooklyn Ent. Soc., Nov. 1878, p. 61. Length 20.5 mm. Middle Cal.
17. *Haydeni, Horn.* Trans. Am. Ent. Soc., III, 69. Length 22 mm. Col.
18. *calidum, Fab.* Syst. Ent., p. 237; Say Tr. Am. Phil., II, 74. Length 22 mm. U. S. var. *lepidum*, Lec. Proc Bost. Soc., I, 201; Bost. Journ., V, 208, t. 18, f. 8.
19. *tepidum, Lec.* Ann. Lyc., V, 199.=*irregulare*, Walk. Nat. Vanc., II, 342. Length 18 mm. Pacific States.

20. *cancellatum*, *Esch.* Zool. Atl, V, 23; var. *ænescens*, Lec. Proc. Ac. Phil., 1854, p. 16. Length 19 mm. Pacific States.

21. *subæneum*, *Chaud.* *Rév.* & Mag. Zool., 1869, Jan., p. 6. Length 17 mm. Cal.

22. *moniliatum*, *Lec.* Ann. Lyc., V, 200.=*laqueatum*, Lec. Proc. Ac. Phil., 1860, p. 318. Length 17 mm. Oregon, Montana.

23. *discors*, *Lec.* Ent. Report, 1857, p. 31, t. 1, f. 9. Length 18 mm. Cal.

24. *Wilkesi*, *Lec.* Ann. Lyc., V, 200. Length 16 mm. Oregon.

25. *luxatum*, *Say.* Journ. Ac. Phil., III, 149.=*pimelioides*, Walk. Nat. Vanc., II, 312, Length 13–17. Kans., Vanc. Island. var. *stiratulus*, Lec. Col. Kans., 1859, p. 4. Utah. var. *Zimmermanni*, Lec. Ann. Lyc, IV, 445. Rocky Mountains.

26. *latipenne*, *Horn.* Trans. Am. Ent. Soc., III, 70. Length 18 mm. Cal.

CARABUS, *Linn.*

Very similar in size and form to Calosoma, but with the third joint of the antennæ cylindrical. They live under stones, rotten leaves, stumps, etc.

G. R. Crotch classifies them (Trans. Am. Ent. Soc., V, 247) as follows:

Thorax punctate beneath.
Fourth joint of anterior tarsi ♂ much smaller than the third. Elytra with margin not serrate near humerus................**1. Vietinghovii.**
Fourth joint transverse.
Elytra catenate, margin near base serrate............**2. Maeander.**
Elytra foveolate, margin simple. ....**3. truncaticollis.**
Thorax smooth beneath.
Posterior angles of thorax hardly produced ....**4. Chamissonis.**
Posterior angles prolonged, rounded.
Elytra foveate.
Color black or brown, thorax narrowly margined.....**5. tædatus.**
Black with violet margin, thorax broadly margined ..**6. sylvosus.**
Elytra catenate.
Elytra with margin serrate near the humeri.........**7. serratus.**
Elytra with simple margin.
Elytral intervals equal, margin bluish..........**8. limbatus.**
Elytra bronzed, four intervals forming slender costæ, **9. vinctus.**

1. *Vietinghovii*, *Adams*, Mem. Mosc. III. 170, t. 12, f. 3.—Mann. Bull. Mosc. II. 292.=*fulgidus*, *gebler.* Length 29 mm. Alaska.

2. *Maeander*, *Fisch.* Ent. Russ. I. 103, t. 10, f. 26.=*Lapilayi*, *Casteln.* Etud. Ent. p. 89.=*Tatumi*, *Mots.* Bull. Mosc. 1865, IV. 293. Length 20 mm.

3. *truncaticollis*, *Esch.* Zool. Atl. V. 22.—Mots. Bull. Mosc. IV. 337, t. 5, f. 3. Length 20 mm. Alaska and Kamtschatka.

4. *Chamissonis*, *Fisch.* Ent. Russ. I. 88, t. 7, f. 12.—Esch. Mem. Mosc. VI. 100.=*brachyderus* *Wied.*=*groenlandicus*, *Chaud.* Length 20 mm. Alaska, Greenland, White Mts., N. H.,

5. *taedatus*, *Fab.* Syst. El. I. 104. Length 25 mm. var. *Agassii*, *Lec.* Agass. Lake Sup., p. 200.
Oregonensis, *Lec.* Proc. Ac. Phil. 1854, p. 16; or, *baccivorus*, *Fisch.* Ent. Russ. I. 87, t. 5, f. 11. Alaska.

NOTES ON SMERINTHUS GEMINATUS, *Say.*

Some time since I mated a female Smerinthus geminatus. Both male and female were of the normal form of this species. From the eggs deposited by the female, over thirty imagines were obtained. About half of these were of the normal form. Of the remainder, one, a male, was a perfect specimen of the variety, Jamaicensis; and the rest filled every gradation between it and the type form. One specimen had but one or two blue scales to represent the second ocellus. In every case it was the inner ocellus which showed a tendency to be lost. The outer one seemed nearly constant, except in position. As the inner one faded, the outer one approached a little the center of the black space which became at the same time less elongate. I have also one female, though not from the same brood, in which a few blue scales represent a third ocellus.—It is in a line with the other two, and nearer the base of the wing than they.

GEO. D. HULST.

On raising Coleoptera.

Some of the readers of the Bulletin may expect a report of the results of my labors in breeding larvæ—see Bulletin p. 36.—

I have to state, that all the inmates of my cages were dead except those in the third containing Chlaenius and Galerita which were intrusted to the care of my friend Mr. Wm. Kampfmuller. These were all alive and I found different larvæ in the earth after a superficial investigation.

But owing to professional duties I had no time to investigate carefully and afterwards a heavy storm blew the box from a third story window down to the street, where it was smashed and the contents washed away by the rain to my great sorrow.

During my stay in the country this year I raised from the larvae, *Dicaelus dilatatus*, *D. elongatus*, *D. politus*, *Staphilinus maculosus*, see Bull. p. 42. *Leistrophus cingulatus* and *Galerita janus*, of which I shall give more particulars in our next number. F. G SCHAUPP.

NEW PUBLICATIONS.

Dr. Horn has in hand a Synopsis of our species of *Cychrus*, some proof sheet of which I have seen; I hope to present extracts from it in our February number, when the publication is complete.

F. G. S.

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CHAS. FUCHS.: No. 14 Bond Str., New York,

WILL pay good prices for Nos. (Crotch's check list) 3205. 3206, 3207a, 3209. 3210, 3211, 3214. Also wanted Scarabæidæ in exchange.

I desire to get by exchange or purchase new N. A. Arctians to my collection. Please send list of duplicates. Also wanted Smerinthus astylus, male and female, for which I will give a perfect pair (ex larva) Platysamia Gloverii, *Strecker*.

EDW, L. GRAEF., 40 Court Str., Brooklyn, N. Y.

H. SCHMELTER.
44 St. Marks place. New York,

WANTS in exchange or by purchase Cryptocephalidæ of Mexico and the West Indian Islands. Also the following species of our fauna [Nos. according to Crotch's check list], 5584, 5585b, 5586, 5591, 5594, 5600, 6505, 607, 5608, 5618, 5619, 5621, 5622. Also Cryptoc. nigerrimus Cr., insertus, Hald., lixus Newm., punctipes Say., quadrifrons Newm.

BULLETIN.

—OF THE—

Brooklyn Entomological Society.

BROOKLYN, JAN. 1879. No. 9.

RAISING COLEOPTERA.

BY F. G. SCHAUPP.

I must acknowledge, the first impulse to study the early stages of coleoptera was given to me by the fact, that so very many specimens looking exceedingly alike are of different species; and that for some time I hoped, by knowing the larvæ it might be possible, to define more distinctly one species from another.

Well, I see I was therein greatly mistaken, I ought to have known that the germs and primary stages of allied species resemble each other much more closely than do the imagines. I forgot the school-lesson regarding the affinities of the embryoes of different genera of the higher orders of the Animal Kingdom.

Fritz Muller says: The more two adult species resemble each other in general appearance and the closer, therefore, they stand related in the animal Kingdom, the longer their embryonic forms remain identical and are distinguishable, if at all only by points of secondary importance.

I have now raised *Dicælus dilatatus*, *D. elongatus* and *D. politus*, I have seen at Dr. Horn's three larvæ of a Southern Dicælus (costatus or splendidus?) and there are less differences in those larvæ than are in the imagines of the same species. Mr. H. B. Wilson in Cincinati has raised *Dicælus purpuratus*, which also differs chiefly by its color from *D. dilatatus*.

Now as a rule it seems to be very difficult to obtain additional points for the distinguishing the species by studying the larvæ. but no doubt there may be obtained some other knowledge of the greatest interest.

Take for instance the placing in the position the genus *Loricera*. which according to Dr. Leconte's classification stands in the neighbourhood of *Blethisa* under the subfamily of *Carabidae*, while by Gemminger and Harold (see Catalogus p. 210) it is placed between Panagaeus and Chlaenius (Leconte's subfamily Harpalidae). Now if the larva of Loricera resembles more that of the first than that of the second subfamily, the species should be placed accordingly.

Further by raising larvae from males and females of the same species, different species based on very slight differences might be united, and by a cross-copulation between allied species we possibly could also diminish the number of our species; the first method may be adopted with Pterostichus, Harpalus etc., the second with Cicindelae.

I take the opportunity to suggest a plan for raising Cicindelidae which may be executed very easily without great cost by many collectors.

Take a box containing several square feet and of about two feet in depth; put six inches of earth at the bottom, then fill it with sand; place it in the garden, and put on it a cover of very fine wire-cloth one foot high; in the middle put a flat tin-pan with water and some pieces of turf around, and I have no doubt, Cicindelidae may be raised.

To make the study of larvae somewhat easier, we shall bring in the Bulletin some excerpts of the literature on this subject, as well as a list of the described larvae of N. A. Coleoptera and we hope to be assisted herein by other gentlemen interested in the matter.

Last summer I used more care in searching for larvae, than in collecting imagines and the following excerpts of my diary will show, with what success.

I had no cages, but obtained a dozen fruit-jars of glass and several small tin boxes such as are sold in the stores filled with pepper, cinnamon and other spices. I put in every jar or box some earth, dry leaves and pieces of rotten wood and covered them with mosquito-netting. In each vessel was of course but one larva.

1. About the first of August I found in a hemlock log, several Clinidium conjugens with a few thin, small, lively larvae, which

I took for the larvae of Clinidium, but Dr. Horn to whom I sent some specimens, thinks they were those of Lebia. All died.

2. Aug. 3. I found the first larva of what proved afterwards to be Staphilinus maculosus, under a stone (pupa Aug. 19., Imago Sept. 6.) see Bull. p. 42.

Larvae of the same species were found under stones and pieces of wood at the following dates.

Aug. 3., died in the larval state Sept.2.
“ 3., transformed into pupa Aug. 21; imago developed Sept. 7.
“ 14., died as larva Sept, 2.
“ 14., transformed into pupa Aug. 19., put in Alcohol.
“ 14., “ “ “ “ 15; imago developed Sept. 1.
“ 19., “ “ “ Sept. 1., put in Alcohol.
“ 20., “ “ “ Aug. 23., died Sept. 10.

The larvae lay hidden always, but when presented with food they seize and suck it very quickly. They were fed with soft wood-boring larvae, flies, caterpillars and during a few rainy days with ants-pupae; but they prefered the soft, milky larvae of coleoptera to any other food.--They were the most rapacious creatures. A notice in W. R. Erichson's Contributions to a Systematic Knowledge on Larvae of Insects stating that the larvae of the carnivorous coleoptera have two claws, puzzled me about these larvae as that of Staphilinus maculosus as well as that of Leistotrophus cingulatus has but one claw.

3. Aug. 15. I found two larvae of a very similar appearance to the above, but about half the size, one of them died Aug. 21., the other transformed into a pupa Aug. 26., (at night) the imago developed Sept. 5. and proved to be Leistotrophus cingulatus.

Aug. 17. larva found, died Aug. 21.
“ 17. another found, transformed into pupa Aug. 22., was eaten by a mouse.
“ 19. another, which escaped Aug. 21.
“ 23. “ moulted at noon Sept. 2.
“ 24. “ died Aug. 25.

They were treated in the same manner as were the above.

4. Aug. 7. I found under stones near the border of a wood a larva much resembling that of Dicaelus dilatatus, which I had raised the previous year, but much smaller, and but slightly dif-

fering [see Bull. p. 43]; it transformed into pupa Aug. 9., imago developed Aug. 19., and proved to be Dicaelus elongatus.

Aug. 12. similar larva found, transformed into pupa Aug. 15., imago developed Aug. 25

" 13. larva found, transformed into pupa Aug. 17., put in Alcohol.

They are very sluggish and seldom touch the food during daytime, while the larvae of Staphilinidae seize it very eagerly: but the Dicaelus made their transformations usually at noon. while the Staphilinidae made them at night.

5. Aug. 12. I found a larva of Dicaelus dilatatus in the same place as those of D elongatus, it transformed into pupa Aug. 20., imago developed Aug. 28., another larva of the same species was found Aug. 12; Aug. 19. it began to split the thoracic parts of the larval skin, but died Aug. 20.

Aug. 13. I found a small larva of the same species, looking steel-blue, but as it became larger it looked exactly like the other, about Sept. 3., it was full grown and died, being attacked at the abdomen by little worms.

6. Aug. 25. I found a larva also, but slightly differing from those under 4. and 5., [see Bull. p. 44.] which transformed into pupa Aug. 30., imago developed Sept. 7.,—just while I was showing my larvae to the members of our Society at a regular meeting and proved to be Dicaelus politus.

Larvae of the same species found Aug. 22. and 28., died Sept. 6.

7. Aug. 12. I found under stones at the same place where I had found the other larvae, two pupae which I considered to be Galerita janus, having seen the sketches in Packard's Guide and read H. G. Hubbard's description in Psyche vol. I. p. 49; next day the imago of one developed; the other was put in Alcohol.

The same day Aug. 12. I found also a larva; it transformed into pupa Aug. 13., the legs became yellow Aug. 21., imago developed Aug. 24., it remained one day white, the second day the elytra became gray and the thorax light yellow, the third it was regularly colored.

Aug. 12. I found another larva of the same species, which transformed into pupa Aug. 22., was put in Alcohol.—

(To be continued.)

8. Anthocharis Lanceolata, *Bdvl.* Wings, upperside white. black at base; primaries upper and underside with faint black shadings at the apex and a black spot bordering on the discoidal cell. Underside of secondaries densely marbled with light brown, veins prominent, brown. Expands about 1¾ inches. Cal.

GENUS CALLIDRYAS, *B'dvl.*

Palpi much compressed, with short hairs, last article conical; antennæ of moderate length, truncated, slightly arcuated, enlarging insensibly from the base to the extremity; body robust, abdomen much shorter than the secondaries; wings robust. discoidal cell closed. The Callidryas are large insects, varying in color from pale yellow to a bright orange, and having ordinarily one or more silvery or ferruginous spots on the underside of the secondaries.

1, C. Eubule, *Linn.* Fig. 4. Male, all wings above and below pale yellow with a very slight border of brown, somewhat heavier at the veins; underside of primaries with a ferruginous cellular spot, which appears slightly through on the upperside; underside of secondaries with two discoidal silvery spots, encircled with ferruginous. Female, same as male, markings much heavier, and the cellular spot on the underside of primaries double and silvery. Expands 2⅛ to 2⅝ inches. U. S.

Female variety Sennæ, Linn. Ground color pale dirty yellow, markings heavier.

2. C. Argante, *Fabr.* Male, wings above light orange, below bright yellow, with markings both above and below as Eubule, but heavier. Female, like Eubule var: Sennæ, only heavier marked and slightly transparent Expands same as Eubule. Fla.

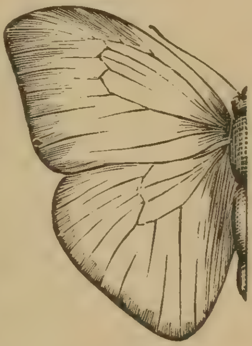

Fig. 4.

3. C. Philea, *Linn.* Male; wings yellow, primaries with a patch of light orange near the anterior margin, but nearer to the base than the exterior margin; secondaries with shadings of the same color along the exterior margin, almost approaching the anterior angle; underside bright yellow, discoidal spots ferruginous. heavier in the primaries.

Female; primaries yellow, brown at the apex, and with a row of marginal and submarginal spots of the same color; discoidal spot black; secondaries yellow with a broad rose colored band extending along the exterior margin, and five marginal brown spots; underside pale rose color, deeper at base, with brownish markings; discoidal spots white bordered with ferruginous. Expands about 3¼ inches. Tex., occasional; also Ill. (W. H. Edwards.)

GENUS KRICOGONIA, *Reak.*

Head broad; labial palpi larger than the head; antennae short, rather slender, ground below, enlarging from the lower third towards the apex, more abruptly clavate than in Gonepteryx, Leach; thorax stout, covered with fine long hairs; wings destitute of prominent angles and more or less rounded: abdomen rather short, not as long as the abdominal margin of the posterior wings.

K. Lyside, *Godt.* Wings dirty white, yellow at the base; beneath, primaries white, secondaries yellowish; the male has two black dashes near the anterior angle. Expands 2 inches. Tex.

Bull. Brookl. Ent. Soc. Jan. 1879.

GENUS COLIAS *Fab.*

Inferior palpi much compressed, covered with short silky hairs, generally rose red, last article much shorter than the preceeding; antennae straight, short, rose red, terminating in an obtuse cone, which extends more than a fourth of their length; abdomen shorter than the secondaries; thorax robust; color more or less lively yellow and orange, border black.

It seems that nearly all of this group have their female albino varieties.

Group I. [Meganostoma, *Reak.* Wings slightly falcate.]

1. C. Cæsonia, *Stoll.* Male; wings yellow; primaries with a black basal patch; cellular spot black; a broad irregular field of the same color covering nearly the entire disk, the indentations of which form the distinct outline of a dogs head, of which the discoidal spot form the eye; secondaries with a black border dentated within, and two large discoidal orange spots; underside bright yellow, discoidal spots silvery, circled in primaries with black, in secondaries with ferruginous.

Female same as male, but less bright and with one or more yellow streaks on the black field near the apex; the border on secondaries is slighter and disconnected. Expands 2 to 2⅜ inches. U. S.

A female variety from the West has the upperside more heavily marked with black, and the underside of secondaries and the apex of primaries beautiful rose red.

2. Eurydice, *B'dvl.* Male; ground color bright orange with a purple reflection on primaries; markings both above and below much the same as the above. Female dirty yellowish white, discoidal spot on primaries black; underside of primaries dirty white with a greenish tinge, of secondaries light green. Expands 2 to 2⅜ inches. Cal.

Group II.

3. C. Philodice, *Godt.* Male, ground color lemon yellow; wings bordered with black, wider at the apex; discoidal spot in primaries black, in secondaries bright yellow; underside of primaries pale yellow with a submarginal row of small black spots; discoidal spot black with a yellow streak; secondaries bright yellow with a row of brown spots parallel to the margin, and a small patch on the costa; two ferruginous discoidal spots, the larger one with a silver center; fringes pink. Female, ground color paler yellow; borders broader, more or less macular in primaries; underside as in male, but with a greenish tinge on secondaries and markings generally heavier. Expands 1¼ to 2¼ inches. U. S.

White female variety.—

4. C. Occidentalis, *Scudder.* Male, upperside same as the above, excepting the discoidal spot, which is substituted by a pale black ring; underside pale yellow; a single discoidal spot on secondaries, bordered by ferruginous; fringes pink. Female; wings pale yellow, the secondaries sometimes without a marginal band; that of primaries is broad, faintly marked, consisting merely of patches of gray scales enclosing large yellow spots; discoidal spots larger and heavier than in the male; fringes pink. Expands 2 inches. Brit. Am.

White female variety.—

5. C. Alexandra, *W. H. Edwards.* Male; upperside pale yellow with black borders and black discoidal spot on primaries, that on secondaries is white, hardly discernable; underside of primaries pale yellow, of secondaries greenish; the discoidal spot on secondaries is small, pearl white. Female; ground color somewhat paler, discoidal spot on primaries large, black; the border on secondaries is absent, on primaries, macular, very faint, sometimes almost entirely wanting; underside same as male. Expands 1⅞ to 2⅜inches. Cal.

On the
Pupae of Platysamia gloverii, *Strecker.*

I received again (this time from Wyoming) a few cocoons of **Platysamia gloverii**, *Strecker.* and as I have at hand a number of cecropia cocoons, I have compared the two species.

The differences I find are:

The cocoons of gloverii are of a uniform silvery grey while those of cecropia are of a light brown color.

In shape the cocoons of gloverii are round at one end and taper at the other while those of cecropia taper at both ends.

The cocoon of gloverii is a great deal smaller than cecropia, its texture is more compactly spun, consequently the cocoon is firmer.

On cutting open the outer case of the cocoon of gloverii, we find the inner cocoon, and the inside of the outer case to be of a chocolate brown color, while in cecropia the color is light yellowish brown.

The pupæ are very much alike, and the only differences I can find are that gloverii is rougher, and darker in color.

There is now no doubt of the two species being distinct as the differences are well marked in every stage of their existence.

My friend Mr. O. Meske of Albany has raised gloverii from the egg, and assures me the larva is totally unlike that of cecropia.

EDW. L. GRAEF

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WILL pay good prices for Nos. (Crotch's check list) 3205. 3206, 3207a, 3209, 3210, 3211, 3214. Also wanted Scarabæidæ in exchange.

Histeridae. I am now working at this group. and am very desirous to obtain Canadian specimens especially of those which are bark feeders. In one Museum here, there is a very fine species of Teretriosoma labelled "Canada" and it would be very interesting to have this confirmed as a Canadian species by a working Entomologist as it is a very northern locality for this genus. If any Entomologist would send me any Histeridae, in a small box during the ensuing summer, I should be extremely indebted to them, and will return specimen duly named, unless they are such as are already known to the senders.

Specimens would come, if loose, benween 2 pieces of cork in an envelope.

George Lewis, 79 Upper Thames Street,
LONDON. ENG.

BULLETIN

—OF THE—

Brooklyn Entomological Society.

BROOKLYN, FEB. 1879. No. 10.

FOR THE BULLETIN.

A new Catocala

Among the interesting material brought by Mr. Albert Kœbele from Florida is a new species of Catocala which I have called **Catocala Sinuosa.** This form is allied to *C. coccinata*, *Grote*, and has bright crimson hind wings. It is remarkable for the reduction of the median band to a narrow sinuate black mark not reaching either margin and merely crossing the disc of the wing. The fore wings are much as in *C. coccinata*, but paler, whitish gray. the transverse lines much as in its congener. The under surface of both wings is largely stained with bright red and here the median fasciæ are very narrow.

On hind wings the median fascia is discontinued inferiorly. On hind wings above the black marginal band is tolerably even, continuous, terminating just before anal angle. This form, which is of the size of *Coccinata*, cannot be confounded with the Texan var. *Circe* of *coccinata*, which seems to intergrade with the type. *C sinuosa* is remarkable among our North Am. Catocala for the abbreviation and narrowness of the band on the hind wings, on their upper surface; it reminds one of an exaggerated discal mark rather than the customary fascia. A R. GROTE

We always strongly object to the creation of new genera and species on slight differences, and for this reason we are sorry to take exception to what Mr. Grote says regarding his new species above.

Mr A. Kœbele found five specimens of this Catocala on white oak from May 2 till May 12. In three of these now before us the median bands differ greatly in width and length, in one it reaches nearly the anterior margin and the color of the surface of the primaries is exactly like that of C. coccinata, and not paler.

We do not like to disagree with so competent an authority on Lepidoptera, as Mr. Grote, and while subsequent captures of this insect may confirm his views, we fail nevertheless, after a careful comparison of his points of specific differences with three of the specimens, to detect sufficient grounds for the formation of a new species. EDITOR.

RAISING COLEOPTERA.

(Continued from page 72.)

The larvæ of Galerita janus are the most fragile and tender that fell into my hands, the whole body seems always to be empty and even by a very slight pressure become flat, those of Dicælus are fat and fleshy, but considerably strong, those of Staphilinus maculosus and Leistotrophus cingulatus are hard and horny.

Besides these larvæ I had several others and I have used at least 200 as food for the specimens I have raised. If it had not been my aim to raise chiefly carabidous larvæ, I might have raised also of other families, as I saw many larvæ of small Staphilinidæ, Mycetophagidæ, Dacne heros, Bolitotherus cornutus, etc. in the tree fungi, and of Elatridæ, Cerambycidæ etc., in decaying wood.

I found also while digging near a decaying stump of a tree, one to two feet below the surface, a very large number of *Phenolia grossa, Fab.*, in the larva, pupa and imago state, the pupæ imbedded in oblong holes; then I found under the bark of a fallen tree a number of larvæ, similar to those of Trichius confinis in cylindrical cases made of some green leaves, oval at one end and flat at the other.

I sprinkled every day a few drops of water over the larvæ and placed them for about an hour in the open air.

F. G. SCHAUPP.

6. *sylvosus*, *Say.* Trans. Am. Phil., II, 75.=*finitimus*, *Hald.* Stansb. Exped., p. 373, (a somewhat narrower form with more distinct punctures.)=*Lherminieri*, *Dej.* Spec., II, 152. Length 27–30 mm. N. Y. to Texas.
7. *serratus*, *Say.* Trans. Am. Phil., II, 77.=*lineatopunctatus*, *Dej.* Length 20–25 mm. East and Middle States.
8. *limbatus*, *Sag.* Trans. Am. Ph., II, 77.=*Goryi*, *Dej.* Spec., V, 544. Length 25–28 mm. East, Middle and Central States.
9. *vinctus*, *Web.* Obs. Ent., 1801, p. 42.=*interruptus*, *Say.* Trans. Am. Phil., II, 62. Length 25–30 mm. U. S.
    var. *carinatus*, *Dej.* Spec., II, 80.
    var. *ligatus*, *Germ.* Ins. Spec., Nov. 1824, p. 6. Lec. Ann. Lyc., IV, 144.

NOMARETUS, *Lec.*

Head elongate, labrum deeply bilobed; epipleura very broad. Antennæ with three glabrous joints; striæ of the elytra not exceeding twelve. They live on woody hills of the Atlantic Slope and are quite rare.

Synoptic Table by Dr. G. H. Horn.

Sides of thorax oblique, hind angles obtusely rounded.
  Elytra with more than 11 striæ on each.
    Thorax with disc impunctured.
      Striæ of elytra distinct, the punctures fine and approximate, **1. bilobus.**
      Striæ of elytra feeble, punctures coarser and distant....**2. fissicollis.**
    Thorax with coarse punctures on the disc...... ....**3. cavicollis.**
  Elytra with 4 imperfect striæ on each..................**4. imperfectus.**
Sides of thorax sinuate, hind angles rectangular, but not prominent...**5. debilis.**

1. *bilobus*, *Say.* Trans. Am. Phil., II, 73; Lec. Trans. Am. Phil. Length 14 mm. Mo., Lake Sup., Ohio.
2. *fissicollis*, *Lec.* Trans. Am. Phil., X, 399. Length 11 mm. Ills., Kansas.
3. *cavicollis*, *Lec.* Col. Kans., p. 3. Length 12 mm. Kansas, Texas.
4. *imperfectus*, *Horn.* Proc. Ac. Nat. Sc., 1860, XII, 569. Length 10 mm. Pa.
5. *debilis*, *Lec.* Trans. Am. Phil., X, 399. Length 9 mm. Ga.

CYCHRUS, *Fab.*

This genus contains species of graceful, sometimes slender form. The head is elongate, the mandibles slender and prominent, the four basal joints of antennæ glabrous. The legs are long, usually slender and well adapted for rapid running. The elytra have numerous striæ, from 14–18, sometimes irregular or even replaced by tubercles. They live in moist woods, hiding under stones and rubbish, feeding on snails, their long head being well adapted for extracting the animal from the shell.

Dr. Horn published in the Trans. Am. Ent. Soc., VII, p. 168–185, a synopsis from which we give the following extract:

Anterior tarsi broadly dilated in the male.
  Genæ dilated covering the maxillæ.
    Legs stout, femora subclavate.... ....**SPHÆRODERUS.**

Anterior tarsi narrowly dilated in the male, the dilated joints always longer than wide.

Genæ not dilated, maxillæ exposed, legs slender....... **SCAPHINOTUS.**

Genæ dilated, maxillæ covered.

Inner lobe of maxillæ with a row of long stiff bristles, legs very elongate, the posterior unequal in the sexes. Elytra very feebly sculptured.................................... **PEMPHUS.**

Inner lobe of maxillæ with, at most, a few hairs and some silken pubescence, legs moderate, similar in the sexes. Elytra striate or punctate........................ .... **BRENNUS.**

Anterior tarsi of male not at all dilated.

Genæ dilated, covering the maxillæ, legs moderately stout..... **CYCHRUS.**

SPHÆRODERUS, *Dej.*

Basal impressions of thorax broad and deep, and with coarse deep punctures more or less confluent.

Elytra oboval, sculpture decidedly granular.............. **1. nitidicollis.**

Basal impressions of thorax linear and not very deep, the punctures rather fine and not confluent.

Hind angles of prothorax very obtuse................. **2. stenostomus.**

Hind angles of prothorax well defined.................. **3. canadensis.**

SCAPHINOTUS, *Latr.*

Anterior tarsi of male moderately dilated, the first three joints papillose beneath.

Thorax very widely margined, the hind angles prolonged backwards. First joint of the anterior tarsi of the male papillose over three-fourths of its surface....................... . .... **4. elevatus.**

Thorax with moderately widely reflexed margin. First joint of the anterior tarsus of the male with a slight papillose space at tip, **5. viduus.**

Thorax with very narrow margin.

Anterior tarsus of male as in *viduus*.................... **6. Guyotii.**

Anterior tarsus of male as in *elevatus*......... .... **7. Ridingsii.**

Anterior tarsi of male more distinctly dilated and densely spongy pubescent beneath, the first joint so clothed over nearly its entire surface.

Thorax very narrowly margined......................... **8. Andrewsii.**

PEMPHUS, *Motsch.*

The inner lobe of maxillæ is furnished in this subgenus with a row of long stiff bristles, while all the other species of Cychrus have there merely silken hairs with a few shorter and stiffer hairs placed in a corresponding row. The femora of the male are longer than those of the female. We have but one species......................... **9. angusticollis.**

BRENNUS, *Motsch.*

Head cristate to a greater or less extent, gula deeply transversely impressed. Basal joints of antennæ very stout and longer than the third, genæ deeply incised.

Anterior tarsi of male with three joints pubescent beneath, fourth with a brush of hair.

Front strongly cristate, occiput deeply transversely impressed, basal impression of thorax deep. Elytra with rows of moderate punctures which are often more or less confused.. **10. cristatus.**

Front feebly obtusely carinate, occiput not impressed, basal impression of thorax feeble. Elytra striate, striæ distantly punctured, **11. rugiceps.**

Head feebly convex, gula not transversely impressed, genæ more or less incised. Basal joint of antennæ normally slender.

Anterior tarsi of male with three joints papillose beneath, the fourth also with a few papillæ.

Thorax much wider than long, strongly constricted posteriorly, disc of elytra not much convex.................... **12. cordatus.**

Thorax cordate, not wider than long, elytra with convex disc.

Sides of thorax posteriorly oblique with scarcely a trace of sinuation, elytra cupreous with greenish or golden margin, **13. marginatus.**

Sides of thorax distinctly sinuate, hind angles rectangular, elytra slightly purplish........................ **14. dissolutus.**

Anterior tarsi of male with the first three joints papillose beneath, the fourth without papillæ.

Elytral striæ not exceeding 14 in number.......... **15. interruptus.**

Elytral striæ 16–18 in number.

Sides of thorax posteriorly oblique.... .... **16. obliquus.**

Sides of thorax posteriorly sinuate.

Elytra striate punctures rather fine.

Thorax usually longer than wide, feebly sinuate posteriorly, margin very narrow and very feebly or not at all reflexed, elytral striæ scarcely at all confused at the sides............. **17. striatus.**

Thorax wider than long, sides posteriorly deeply sinuate, margin wider and distinctly reflexed, outer three or four elytral striæ much confused behind the middle.................. **18 ventricosus.**

Elytra with extremely fine striæ, punctures large . **19. mimus.**

Anterior tarsi of male with the first two joints only papillose.

Thorax posteriorly slightly sinuate, not constricted, surface subopaque, elytra ovate.

Elytra finely striate. striæ with rather coarse deep punctures, **20. punctatus.**

Elytra without striæ, but with rows of rather fine punctures, **21. subtilis.**

Thorax posteriorly constricted, sides posteriorly deeply sinuate, surface moderately shining, elytra longer oval.

Elytra finely striate, striæ finely punctured, the alternate intervals behind the middle with a row of punctures, **22. striatopunctatus.**

CYCHRUS, *Fab.*

Front flattened, sides of thorax sinuate posteriorly, elytra with series of tubercles.. **23. tuberculatus.**

Front transversely convex, sides of thorax oblique, elytra rugulose with traces of tubercles at declivity............................ **24. Hemphillii.**

Front carinate, thorax angulate at middle, base slightly prolonged, hind angles rectangular, elytra finely punctato-striate.............. **25. angulatus.**

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25. *angulatus*. Harris, Bost. Journ., II, 200. Length 20 mm. Oregon, Vancouver Island.

Notes on Deiopeia bella, *Linn.*

Deiopeia bella. Linn. was in my experience always an extremely local species. Sometimes in my rambles, one would start up before me, and by search in the vicinity I would generally secure a dozen or more; while perhaps not another would be met during the season. Last September I had excellent evidence of the local tendency of this species, or at least of the fact that it is not often found far from its food plant.

A friend reported that by accident he had found a place where the moth was plentiful; we went together to the place the next day; it was an artificial depression, flat on the bottom, about 300 by 150 feet in extent, and with steep banks 6 to 10 feet in hight, and was part of an unused grass field. The place was alive with the beautiful moth, they rose before the feet of one walking in swarms.

A dozen might have been taken with one sweep of the net. But outside of this depression, hardly a moth was found, and those very near by it, The ground was thickly covered with the food plant, the common rattle box, Crotalaria sagittalis, Linn.; and the seed vessels, almost without exception, showed a circular hole in the side, the work of the larva of the moth.

Some interesting varieties were taken. A few of the bright red form D. speciosa, Walk. a few others as light as D. ornatix Linn. and many varied greatly as to the amount of black on both upper and lower wings, some having almost none.

The record leads us to believe in the suggestion of Mr. Stretch that bella, speciosa, and ornatrix, are nothing more than varieties of the same species.

GEO. D. HULST.

In Mr. Graef's article on the Pupæ of SAMIA GLOVERI he states that a friend who had raised this species from the egg assures him the larva is totally unlike that of CECROPIA. I would merely mention in connection with the above that the larva has been fully described and the points of difference between it and the allied species, COLUMBIA, CECROPIA and CEANOTHI noted in detail in the 2d vol. of the Proc. of the Davenport Acad. of Nat. Sc. p. 276–278. (1878) HERMAN STRECKER.

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WILL pay good prices for Nos. (Crotch's check list) 3205, 3206, 3207a, 3209, 3210, 3211, 3214. Also wanted Scarabæidæ in exchange.

Histeridae. I am now working at this group. and am very desirous to obtain Canadian specimens especially of those which are bark feeders. In one Museum here. there is a very fine species of Teretriosoma labelled "Canada' and it would be very interesting to have this confirmed as a Canadian species by a working Entomologist as it is a very northern locality for this genus. If any Entomologist would send me any Histeridae, in a small box during the ensuing summer, I should be extremely indebted to them, and will return specimen duly named, unless they are such as are already known to the senders.

Specimens would come, if loose, between 2 pieces of cork in an envelope.

George Lewis, 79 Upper Thames Street,
LONDON. ENG.

BULLETIN.

—OF THE—

Brooklyn Entomological Society.

BROOKLYN, MARCH. 1879. No. 11.

ON COLEOPTEROUS LARVÆ

OF THE

FAMILY OF TENEBRIONIDÆ.

BY C. F. GISSLER.

On page 18 of the Bulletin I have endeavoured to describe the larvæ of Eleodes gigantea, and dentipes. Since that time new material has been received and the occasion is now made use of to present additions to those observations as well as remarks on other larvæ.

I had occasion to study the larvæ of Blaps, Tenebrio, Boletotherus, Eleodes, Gnathocerus, Platydema, Tenebrionellus and Xylopinus, and found, as already hinted to in No. 2 of Bulletin, that they are fair examples of the law of ontogenetical continuity of closely related animal forms, whose embryonic stages are nearly identical and scarcely if at all, differentiated. In both genera Tenebrionellus as well as Eleodes (fig. 15) the 1st post-embryonic stages are alike in the form of the pygidium.

To the latter I have paid more attention though it is liable to slight variations in larger individuals of Blaps and Eleodes.—

The larvæ of Tenebrionidæ in general closely resemble those of Elateridæ, the former differ in having the cardo of maxilla connate and a transverse impression immediately behind the clypeus, thus apparently separating the same from the front, and also by the better developed labrum.

Very young larvæ have their antennal joints more globular than older ones. In full grown larvæ of Tenebrionidæ the 1st joint of antenna is much shorter than the 2nd, its substance soft.

non-chitinized and retractile; its position is in a minute cavity which is surrounded by a semi-circular ridge.*

What I formerly called "penicilli" may be better termed "articulated spines". (fig. 4.) The integumental appendages of larval pygidia may be regarded as homologa of the dorsal parapoda of their ancestors, the Annelides.

In exuviations these organs are also cast off together with the bristles etc., of the entire integument. Their position and structure allow them to yield to slight pressure. but they are not coordinate by will since no muscular fibres could be found to move them. The terminal nerve-branches, arising from the 8th (last) abdominal ganglion, I was able to follow—in young individuals —not farther than to the two propellers.

Two very minute tubercles can be seen under higher microscopic power at the middle of base of pygidial tips in Eleodes. Whether they are orifices or not I cannot decide. The larger individuals of Eleodes-larvæ, when disturbed and handled, violently jerk their abdomen and spurt a turpid, odorless and watery liquid out of two lateral orifices situated under the tergal fold near the posterior margin of the 7th abdominal segment.

This organization is a peculiar adaptation to the larval body since the excretion of the repugnatorial gland in the imago is spurted out through the anal opening. The higher developement of this gland is certainly attained during the chrysalis-period.

The gibbosity of the 2nd (chitinized) antennal joint of Blaps, Tenebrio and Eleodes is in every case on the outer side of the joint.

But little attention has been paid to slight differences in the forms of maxillæ and maxillary palpi and for sake of comparison but two have been figured (fig. 2 and 15). The maxillary spines are in every case not articulated but deeply inserted into the mando of maxilla. The tips of maxillary palpi of Boletotherus is covered with what may be termed "sensitive aciculi" (fig. 16). The same are also on tips of labial palpi. A median canal runs through the tip of the maxillary palpus (which is lacking in labial palpus), and, though I could see no aperture, appears to indicate the seat of a sensitive bristle of the 1st post-embrionic stage.

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* It is somewhat doubtful whether this soft, integumental process deserves to be called "joint," though Wm. R. Erichson describes the same as the first joint in the larva of Tenebrio. See Archiv fuer Naturgeschichte. 1841 p. 365.

Little attention has been paid to the sculpture of the pygidia in general: a few smooth spots are on pygidium of Eleodes, one on each side and one in the middle; one punctured spot on each side of Tenebrio; two excavations on each side in Boletotherus etc. Very probably these marks are peculiar to **species** and not to **genus**, which further investigations will show.—In living individuals of Tenebrionidæ larvœ the 4th antennal joint can be retracted into the 3rd joint to some degree and after death there is often only the tip of bristle visible sticking out of the 3rd joint.

Brief notes on pygidial differences.

Unfortunately I had access to but a few Tenebrionda the generic differences of which I point to the following, thus enabling the student to recognize the same.

Blaps mortisaga, *Fabr.* Number of articulated spines usually 12 lateral and 2 latero-terminal. Out of 10 individuals I had 2 with 16 in all, rest only 14.

Eleodes gigantea, *Mann.* and **E. dentipes**, Esch. Number of articulated spines usually 16 lateral and 2 latero-terminal. A number of either species (gig. and dent.) had only 16 in all. One individual had two articulated spines in one aperture, one had them assymetrically placed, nine on one and eight on the other side.

Gnathocerus cornutus, *Fabr.* Tip minute; two comparatively long acinaciform processes a little behind the middle on each side. (length of larva 8 mm.)

Platydema excavatum, *Say.* Four longer and four shorter articulated spines, tip very small, flat and cut off.

Tenebrionellus tenebrioides, *Beauv.* Nearly entire pygidium irregularly covered with articulated spines of three different lengths; tip round.

Xylopinus saperdioides, *Oliv.* Pygidium deeply punctured; two slightly diverging terminal, gradually turned-up hooks and one very minute articulated spine on each side at base of hooks.

Tenebrio obscurus, *Fabr.* Pygidium with median longitudinal groove, one lateral punctured notch and two terminal, small, suddenly turned-up hooks. Pygidium cordiform and comparatively small. Two minute articulated spines on each side a little behind the middle. Pygidial base very convex.

Boletotherus cornutus, *Fabr.* Pygidium without terminal tip, very declivous; semi-circular with a pair of lateral large acinaciform and rugose processes, tips of which turned down and inward.

Supplementary notes. Maxillæ and maxillary palpi of XYLOPINUS as in Eleodes (fig 2.); molars of mandibles more fully developed, mentum elongate, narrowing towards tip, labrum subemarginate.

Maxillary palpi of TENEBRIONELLUS differ from Eleodes in being narrower at tip. Labrum emarginate, mentum oval and quite large.

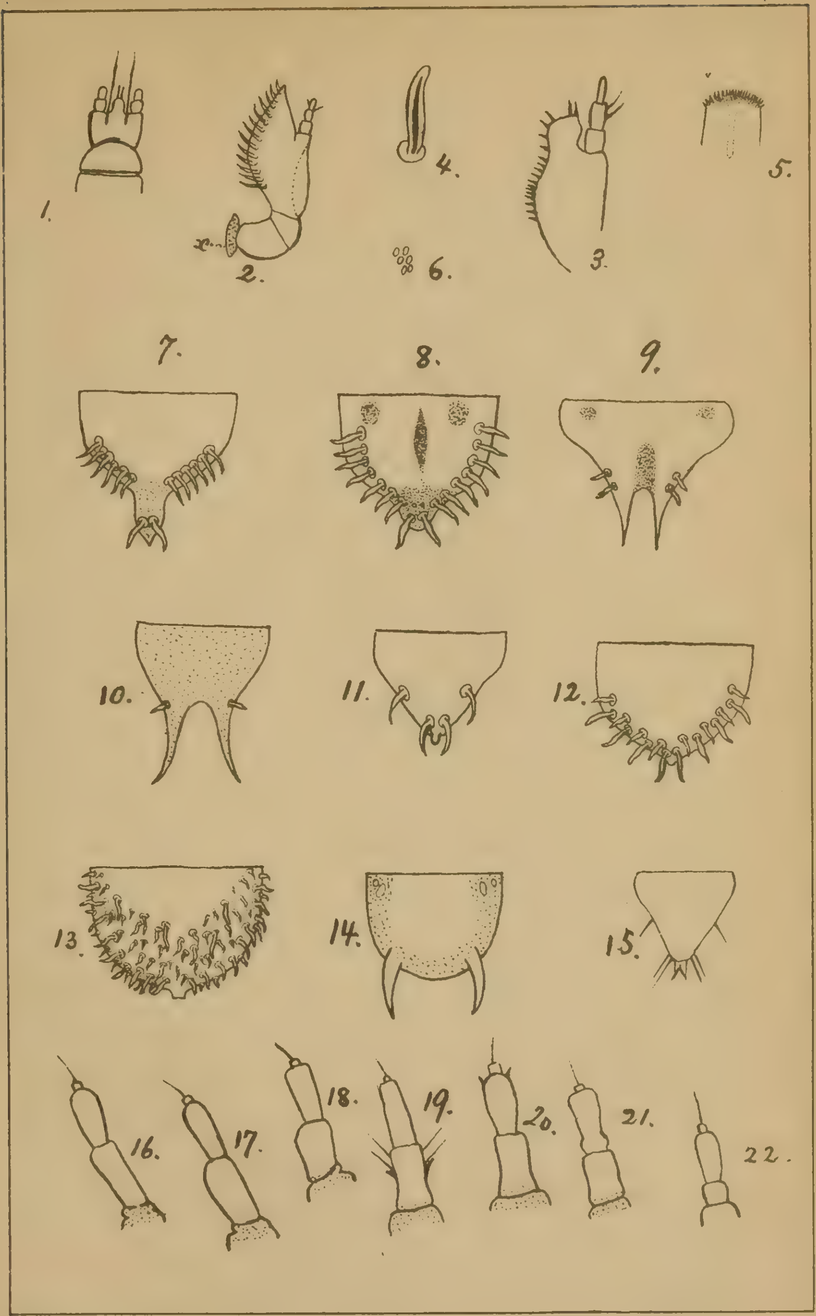
Mentum and ligula of BOLETOTHERUS comparatively broader and shorter than in the other genera.

GNATHOCERUS has a pigment-spot on the ophthalmic region; second joint of maxillary palpus with a longer outer bristle, terminal (3d) joint of maxillary palpus longer than 1st and 2d joints and tapering toward tip. There is great resemblance in the antennæ (fig. 16–22), the remarkable exceptions are in Boletotherus (fig. 19) with 2 spines and 4 bristles at 2d joint and in Xylopinus (fig. 20) with 2 spines at tip of 3d joint. The antenna of Platydema is like that of Gnathocerus.

EXPLANATIONS TO FIGURES. **

Figure. 1. Gular lobe, mentum, ligula and labial palpi of Eleodes.
“ 2. Maxilla and maxillary palpus of Eleodes. x-glandular lobe.
“ 3. Maxilla and maxillary palpus of Boletotherus.
“ 4. Articulated spine. Highly magnified
“ 5. Tip of maxillary palpus of Boletotherus.
“ 6. Natural size of Eleodes eggs.
“ 7. Pygidium of Blaps.
“ 8. “ “ Eleodes.
“ 9. “ “ Tenebrio.
“ 10. “ “ Xylopinus.
“ 11. “ “ Gnathocerus.
“ 12. “ “ Platydema.
“ 13. “ “ Tenebrionellus.
“ 14. “ “ Boletotherus.
“ 15. “ “ Eleodes shortly after hatching. magn. 60x
“ 16. Antenna of Eleodes.
“ 17. “ “ Blaps.
“ 18. “ “ Tenbrio.
“ 19. “ “ Boletotherus.
“ 20. “ “ Xylopinus.
“ 21. “ “ Tenebrionellus.
“ 22. “ “ Gnathocerus.

Bullet. Brookl. Ent. Soc. March 1879.



C.F.A. fec.

GENUS COLIAS *Fab.*

6. **C. Edwardsii,** *Behr.* Very close to Alexandra, but the costal edge and apical part of fringes on the upperside of primaries, and the costal edges of both wings on the underside are roseate, and the discal spot on underside of secondaries is pearly, edged with rosy scales. Expands 2⅛ to 2⅜ inches. —Utah. This may prove to be a variety of Alexandra.

7. **C. Emilia,** *W. H. Edwards.* Male; bright lemon yellow; narrow black borders cut to the edge by yellow nervures; discal spot of primaries small, yellow, subovate, edged with black, absent on secondaries. Underside of primaries same yellow at base, paler elsewhere, of secondaries tinted buff, densely powdered with black; discal spot small, pearly in pink ring. Female; paler; border on primaries indefinite, on secondaries wanting; discal spot on primaries large, black, on secondaries pale orange; underside same as male. The fore wings are longer and more pointed than in Alexandra. Expands about 2 inches.—Oregon.

This species is also close to Alexandra, and may prove but a variety.

8. **C. Laurentina,** *Scudder.* Male; lemon yellow, border black, broad; discal spot of primaries small, subovate, orange in fine black ring, of secondaries large, white with pink scales, in broad, pale ferruginous border. Female; either yellow or whitish (say greenish white), border slighter, limited to apex and upper part of hind margin, with yellow patches not fully enclosed; discal spot of primaries like male, but larger [on the white ones paler], of secondaries orange [on white ones cream color]; both discal spots with considerable pink. Expands 1½ to 1⅞ inches.—Cape Breton Island, Quebec, Maine.

9. **C. Chrysomelas,** *Henry Edwards.* Male; upperside bright citron yellow with broad black borders; discal spot on primaries small, on secondaries from orange to obsolete; underside of primaries orange, lemon yellow on inner margin, of secondaries orange powdered with black scales; discal spot on secondaries red surrounded with brown, often duplex. Female; paler colored; borders broad, paler, with inclusive yellow patches; underside paler; discal spot less red. Expands 2 to 2¼ inches.—California.

10. **C. Barbara,** *Henry Edwards.* Male; unknown; Female; upperside bright canary yellow; border black, slight; discal spot small, ovate, deep yellow in black ring, of secondaries pale orange. Underside lemon yellow; secondaries powdered with black, giving a greenish appearance; discal spot large, circular, clear white in brownish ring and duplex. Expands 2 inches. —California.

11. **C. Eriphyle,** *W. H. Edwards.* Male; canary yellow; borders pale black dusted with yellow, on inner margin of primaries pale yellow; discal

spot of secondaries either pearly white with a few pink scales, or strongly roseate, ringed by ferruginous, sometimes duplex. Female; same yellow, discal spot as in male; underside either deep yellow or pale greenish, white, much dusted; discal spot as in male. Expands 1⅞ to 2 inches.—British Columbia.

12. C. Interior, *Scudder.* Male; color pale brown yellow; borders black; discal spot of primaries double, convex, small, black, but often denuded of the black, and then an orange spot appears; of secondaries large, orange, either pale or deep colored; fringes pale rose, mingled with yellow on whole of secondaries and at inner angle of primaries; underside of primaries same shade as upper, but deeper yellow near apical area, of secondaries yellow, from light to deep colored, very much as in Philodice; both wings immaculate except for a few brown scales at outer angle of secondaries; discal spot of primaries orange, edged with black; of secondaries large, either pearl white with a roseate outer edge, or wholly pale roseate, surrounded by a ferruginous ring, and sometimes this by a paler ring. Female; same size and color as male; primaries have a blackish border to apex and hind margin; secondaries none; discal spots as in male. Below primaries as in male, and discal spots of both as in male. Expands 1⅛ to 2 inches.—Habitat British America, Ontario, Quebec, Alaska.

13. C. Christina, *W. H. Edwards.* Male; upperside, ground color bright yellow with large orange patches on the disks; borders broad, black, covered by yellow nervures; discal spot of primaries small and black, of secondaries large, deep orange; underside of primaries same as upperside, but sometimes paler, of secondaries greenish, covered uniformly with fine black scales; discal spot of primaries as on upperside, of secondaries silver white circled by reddish brown. Female; upperside pale greenish yellow, without a border; discal spots as in male; underside pale and immaculate, excepting the discal spots; the basal half of primaries brownish yellow otherwise like the male; fringes rose red. Expands from 2 to 2½ inches. Habitat British America, Great Slave Lake, Athabasca.

14, C. Pelidne, *B'dvl.* Male; upperside pale yellow with a greenish tinge to secondaries; body and base of wings black; discal spots very faint; borders black, yellow at the veins, terminating on secondaries a little short of the anal angle; underside of primaries pale yellow; discal spot black; of secondaries greenish; discal spot white edged with red. Female; upperside dirty white with a pure white discal spot on secondaries; border on primaries very faint, smoky, sometimes almost entirely wanting; underside, primaries white, yellow at apex; discal spot subovate, white in fine black ring; secondaries greenish yellow; discal spot white circled with red; fringes and antennæ of both sexes pink. Expands 1⅝ to 1⅞ inches. Habitat Labrador, Alaska.

Notes on Samia Cynthia.

A few weeks since, I found more than a dozen undoubted cocoons of Samia Cynthia upon Tulip trees, so situated as to make it certain that the larvae had lived upon the trees as their food plant; during the summer I found the larvae feeding upon the Sassafras. Apart from these, and the Ailanthus the ordinary food plant—I have never known the Cynthia of its own accord to choose any of our many shrubs or trees for food. It is certainly interesting, that the only indigenous trees which Cynthia has taken as food plants, (both widely differing from the Ailanthus, and each other), should be what here are the common food plants of its very near relatives Callisomia Angulifera and Promethea. It would seem that something more than mere circumstance had to do with the choice. Taken in connection with the strong tendency of these species to mate with one another, it is likely they are so nearly allied that a generic distinction is not warranted. When the present fever of genus making has run its course, Cynthia, Promethea, and Cecropia will but typify groups of one genus.

GEO. D. HULST.

Notes on some species of Thecla.

On comparing a female Thecla behrii, Edw. with a male T. kali, Strecker I find the species to be identical, and the only difference is in the size, which is however not greater than in the sexes of allied species.

Mr. Strecker, in his Catalogue of Butterflies, (p. 90) states that T. behrii is unknown to him in nature, which explains his redescription of Mr. Edwards species.

On page 89 of the same work, Mr. Strecker states T. siva, Edw. is perhaps identical with T. damon, Cram (smilacis Boisd.) which assertion I am sure he would not have made had he seen T. siva in nature.

T. siva is very unlike damon, and is very close to T. dumetorum Boisd. The only differences I find between them (I have but one male siva) are that in dumetorum the exterior margins of the posteriors are slightly dentated while in siva they are entire.

On the underside, the faint crescents of white near the exterior margin of the posteriors in siva are bordered above with black, which latter is absent in dumetorum.

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BULLETIN

—OF THE—

Brooklyn Entomological Socety.

BROOKLYN, APRIL. 1879. No. 12.

On Acronycta Walkeri, and Orthosia lutosa, *Andrews.*

On page 98 vol. 9, Canadian Entomologist, the late Mr. W. V. Andrews described a new species of Acronycta, as A. Walkeri.

Through the courtesy of Mr. John Akhurst (who has acquired the collection of the deceased) I was enabled to see the types of A. Walkeri, and Orthosia lutosa, described in the same article.

I discovered his A. Walkeri to be identical with A. alborufa. Grote, which latter has the priority, being published in the Proc. Boston Soc. Nat. Hist. 1874, p. 239, while Andrews description of A Walkeri was not published until 1878.

The other species Orthosia lutosa is a good species unless it eventually proves to be one of Walkers species, whose types are contained in the British Museum. I have sent specimens of O. lutosa to London for identification and will report later.

Both species occur on Long Island.

EDW. L. GRAEF.

A new and practical apparatus for preparing larvae and pupae, especially of Lepidoptera

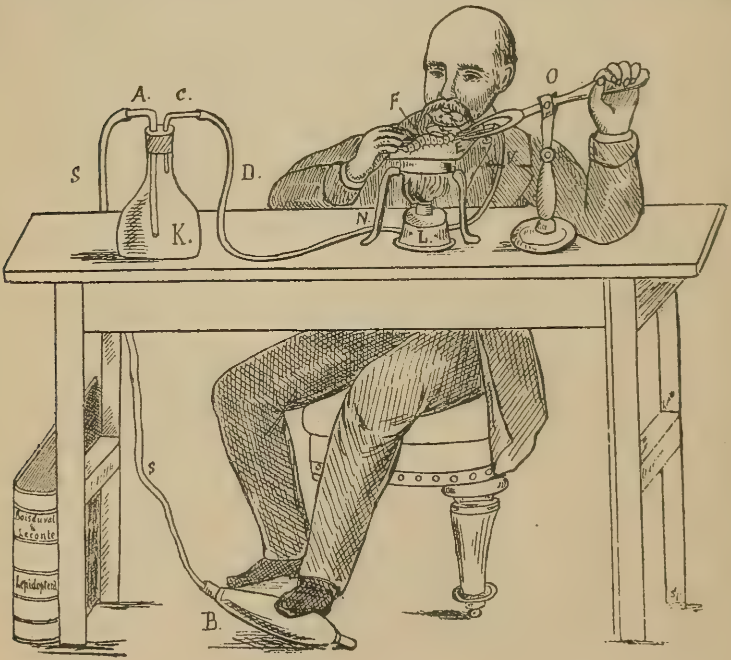
has been described in *Dr. Katter's Entomologische Nachrichten* 1879, vol. V. p. 7, of which the following is an extract.

In preparing larvæ of insects for Entomological collections several methods have been used. The simplest and most common of these is: Empty the larva by slight pressure and introduce a straw into the anus and blow in air holding it over an alcohol lamp until it is fully expanded and dried.

This method has two great faults; first, that only one hand can be employed to give the larva the required shape, as the other is occupied in holding the straw while blowing in the air: second, that the last ventral segment, so characteristic in many larvæ is spoiled by the insertion of the straw.

Recently Mr. Fritz A. Wachtel has constructed an apparatus, which we think will work excellently. It consists of bottle **K** tightly closed by a cork or rubber. Two regtangularly bent glass tubes pass through this cork, the one **A** having a larger diameter, is connected by the rubber tube **S**, with the rubber bellows **B**, the smaller one **C** connects by the rubber tube **D** with a fine pointed glass tube **E**, on which the larva-skin **F** is secured. The glass tube is held by the stand **O**, which allows vertical and horizontal movements thereby facilitating the approach of the larva to the heated metal plate that rest upon the tripod **N**, under which is placed the gas or alcohol lamp **L.**

The bellows are worked by the foot and the air passing through the rubber tube **S** and the glass pipe **A** is compressed in the bottle by reason of the smaller diameter of the exit pipe **C**, caus-



ing a continuous and uniform current of air, which can be still further controlled by opening or closing the cock **V**.

If it is desired to introduce warm air into the larval skin, the bottle **K** may be placed upon a sand-bath.

The size and fineness of the point of the glass pipe **E** upon which the larval skin is secured depends upon the size of the larvæ, therefore several sizes of them should be ready.

To fasten the skin upon the glass point wind a common insect pin around the glass, bend it along the pipe and make a small hook of the pin point see fig. 2. or bind with thread two springs to the pipe fig. 3., have them bent rectangularly at the end and the tip fitted to the pipe fig. 4.

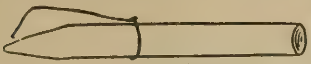


fig. 2.

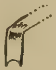


fig. 4.

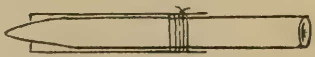


fig. 3.

Large larvæ can be prepared in from four to six minutes, middle sized from two to four minutes, and very small ones from one to two minutes.

H. SALTZWEDEL.

On Synonymical and Varietal Names.

Mr. Austin in his Presidential address "*Psyche, March* 1879 *p.* 223," protests against the tendency "sprung up recently," of ignoring variations and regarding as synonyms the names under which they have been described.

The majority of collectors will find with me the "tendency," against which Mr. Austin protests very praiseworthy and meritorious; it did not however, spring up so very recently; our greatest contemporaneous American Entomologist, Dr. Leconte himself did the same thing a long time ago.

Take for inst. his *Monograph on Pasimachus, Ann. Lyc. Nat. Hist. N. Y.* **1848,** where you find **twelve** species, which Leconte himself reduced in his *notes on Pasimachus, Bull. Buff. Soc,. Jan.* 1874, *p.* 266, to **seven,** regarding the remaining five as variations,

He says page 268:

"This species (P. sublævis) varies in size and sculpture and there is every intermediate grade between the type to the smooth and more shining *substriatus.* These intermediate forms were described by me as *rugosus* and *assimilis* the former being an individual variation."

Now of course there were some differences between the former 12 species, which however disappeared like snow in summer in the large serial collection Dr. Leconte now possesses.

When I said the majority of collectors will be pleased by a reduction of names rather than by an increase, let us see, who cuts down the superfluous names.

Those who pursue the study of specific differences most thoroughly and possess the largest collections from the greatest number of localities, these not only **advocate** the reduction, butshow their faith by the unloading of useless names!

In regard to the retention of varietal names Mr. Austin's attention might be drawn to the synonymy of *Rhipiphorus pectinatus*,* in which fifteen names occur, each of which applies to some color variety! Shall such names as these be allowed to burden our books and memories?

Synonyms are as useless as a scaffolding after the house is built and fully as much an eyesore.

It is difficult to define what precisely constitutes a species just now in this genus-making age.

A specimen exhibiting some marked differences from a known species is no new species but quickly elevated to the rank of a genus!

Quousque tandem, Catilina etc., ? !

I cannot close without citing what Dr. Leconte says Bull. Buff. Soc. 1874, p. 266.

"Among the crude results of my earlier studies was a monograph of the genus Pasimachus; being then inexperienced in the recognition of species, I was, like most young naturalists** led to exaggerate the value of characters which were either individual or unimportant and thus to multiply the supposed distinct forms beyond what larger series of specimens have shown to be tenable."

Sapienti sat.

---

* *Trans. Am. Ent. Soc.* 1875, *p.* 124.

** And a very great many old ones including the modest............Editor

BULLETIN

—OF THE—

Brooklyn Entomological

SOCIETY.

VOLUME II.

BROOKLYN, N. Y.

MAY 1879. —— APRIL 1880.

BULLETIN

—OF THE—

Brooklyn Entomological Society.

VOL. II. BROOKLYN, MAY. 1879. No 1

With the present number the Bulletin begins its second volume. It has prospered and found friends far and wide and has been the recipient of many favors from gentlemen, eminent as authorities in the Entomological world and by their assistance has, we trust done some good, and we hope by their kind aid to increase its usefulness in the future.

In vol. II. the Synoptic tables on Lepidoptera and Coleoptera will be continued as heretofore, it will also contain a list of the described North American Coleopterous larvæ with some notes on their classification.

On the last two pages will be given an explanation of terms used in Entomology; as these pages will be numbered and bound separately, they will without doubt prove useful to many students and collectors.

We shall constantly aim to give the latest news on Lepidoptera and Coleoptera and make the Bulletin an efficient co-worker with all interested in these branches of Natural Science.

Wishing to make it a medium of exchange between practical collectors we offer for this purpose to subscribers who have good things to exchange, the space of two square inches for advertising for the sum of ten cents.

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Your choice from 300 Coleoptera at 1c. per specimen sent alive, post paid.

If you want perfect specimens for pinning or to study structure while alive, send for crotch's check list No's. or names.

W. L. Devereaux. Clyde, N. Y.

FOR SALE. A Collection of exotic Coleoptera, containing
2400 named European species in 4100 specimens.
1600 undetermined. " " " "
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I desire to get by exchange or purchase new N. A. Arctians to my collection. Please send list of duplicates. Also wanted Smerinthus astylus, male and female, for which I will give a perfect pair of (ex larva) Platysamia Gloverii, *Strecker*.

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9 Broadway, Brooklyn, E D., N. Y

BULLETIN

—OF THE—

Brooklyn Entomological Society.

VOL. II. BROOKLYN, MAY. 1879. No. 1.

List of the described coleopterous larvae of the United States

with some remarks on their classification.

BY F. G. SCHAUPP.

The present essay on coleopterous larvæ owes its existence to a desire I myself felt to know something about them. In preparing it, I made free use of the below named works upon the subject.

We should expect, that a systematic classification of the larvæ would correspond with that of the imagines; for instance the larvæ of Buprestidæ and Elateridæ would be very similar, but this is not the case.

The larvæ have 13 **segments,** head, prothorax, mesothorax, metathorax and nine abdominal segments, the last three of which form the genital apparatus.

The greater part have three pairs of **legs,** on the second, third and fourth segments and a proleg at the last segment. The Buprestidæ, Rhynchophoridæ, and some Cerambycidæ have no legs at all.

The legs consist of five or six joints, coxa, trochanter, femur, tibia, tarsus and moveable claw, or instead of the last two only of a claw-shaped tarsus. Cicindelidæ, Carabidæ, Dytiscidæ and Hydrophilidæ have two claws (also some Meloidæ in the first stages) and are thereby distinct from all other larvæ, which have but one claw.

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W. R. Erichson. Zur Systematischen Kenntniss der Insectenlarven. Archiv fuer Naturg. VII. p. 60 VIII. p. 363. XIII. 275.

Candeze et Chapuis. Catalogue des larves des Coleopteres connues jusqu'a 1853. Mem. Soc. de Liege VIII. p. 341.

J. C. Schioedte. De Metamorphosi Eleuth. observationes. Kroyers Naturhistorisk Tidsskrift. VIII. p. 165.

Westwood. Introduction to a modern Classification of Insects.

The **head** is always distinct, usually corneous with one to six eyes (ocelli) at its sides behind the antennæ.

The **antennae** are seldom wanting and consist of not more than four joints sometimes augmented by laterally inserted joints, usually above the base of the mandibles, rarely on the front.

The **mouth** is very important. Many larvæ masticate their food. In this case all the oral parts are at the opening of the mouth ; some larvæ only suck their food, having the mouth very small, scarcely visible and the oral parts are often very distant from the opening of the mouth.

The **mandibles** are always (horny) corneous and according to the manner of feeding differently shaped. In rapacious larvæ they are sharply pointed, often dentate more or less prominent. In those that masticate their food, they are stout and short, the insides fitting to each other.

The **maxillae** consist of several parts, the same as in the imago. The basal piece is sometimes exceedingly developed, and supports at its extremity two appendages, an inner and an outer one ; the inner (maxillar lobe) is mostly one-jointed, in Carabidæ and Elateridæ two-jointed ; the outer (maxillar palpus) usually three-jointed.

The **labium** consists as in the imagines of mentum, ligula and labial palpi. The mentum is frequently more or less connate with the head, often fleshy, never so developed as to cover the two-jointed palpi. The ligula is often wanting or rudimentary. (Buprestis has mentum and ligula much developed).

The last abdominal segment ends by a cylindrical anus, which is used as a propeller.

Stigmata, nine pairs ; the first beneath the mesothoracic segment (rarely under the prothorax), the other eight at the sides of the remaining segments.

CICINDELIDÆ.

These larvæ are remarkable for the hook which they have at the back of the fifth abdominal segment and by which they hold themselves in the vertical holes, they dig in the earth or in the sand where they wait for their prey.

They have legs with six joints, the two claws being moveable and four eyes on each side with the exception of Amblychila, which has but one eye on each side.

Leconte says they are easily procured in spring, by placing a fine straw down the hole, when the larva will gradually push it out and rising to the surface, may be captured.

Amblychila cylindriformis, *Say.* Dr. Horn described, Trans. Am. Ent. Soc. vol. VII. p. 29, pl. II., the larva, dug out by Mr. E. W. Guild in Kansas from borrows of 14 inches to 3 ft. deep, in dry, clayey banks.

Color yellowish white, head and prothoracic scute castaneous. 44 mm. long, 6–7.5 mm. thick. Eyes one on each side. Spiracles 9 pairs, the first and largest under the margin of the prothorax.

Omus Dejeanii, *Reiche.* Dr. Horn, l. c. p. 31. Color yellowish white, head piceous, prothoracic scute pale castaneous. Length in normal flexed position (see fig.) 20 mm. width 4 mm., (perhaps not fully grown). Eyes four on each side, two larger and two smaller. Spiracles as in Amblychila.

Tetracha carolina. *Lin.* Dr. Horn, l. c. p. 34. Color yellowish white, head and thorax corneous with metalic surface, the margin of the latter testaceous. Length 17 mm. Eyes four on each side. Spiracles as above.

(To be continued.)

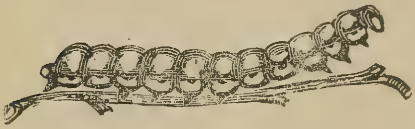
NOTES ON

Notodonta Tremula, Clerck, *N. Dictaeoides*, Esp., and *N. Rimosa*, Pack.

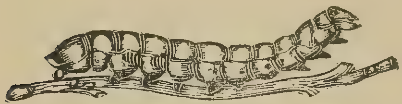
Referring to the article in the Entomological Contributions by Mr. J. A. Lintner (Report of the New York State Museum of Natural History, 1878, p. 76.) on *Notodonta Dictaea*, Linn., I beg to offer the following. According to Dr. O. Staudinger (see his Catalogue, p. 72 and 73.) there are two distinct species in Europe, *Notodonta Tremula*, Clerck (Dictæa (L.) Esper) and *Notodonta Dictaeoides*, Esper. They are closely connected, but present differences by which they can be distinguished. The male of *Tremula* has the antennæ stronger and more heavily pectinated than *Dictaeoides*; in the specimens I have seen the brown shadings are of a richer color in *Dictaeoides*; the white lines on the veins near the exterior margin of the primaries are longer in *Tremula*, while the white streak near the inner angle of primaries is wider, of a clearer color, and consequently more conspicuous in *Dictaeoides*, and the secondaries of this species are rather darker than in *Tremula*. Our American congener, *Notodonta (Pheosia) Rimosa*, Pack., would seem to stand between the two, the markings bearing closer resemblance to those of *Tremula*, while the antennal structure of the male conforms more to that of *Dictaeoides*.

The three species certainly present a similarity remarkable in the entomological relations of the two countries, and as I was rather puzzled what to think of them I concluded to investigate them more fully. I had on a few occasions found the larva of *Rimosa*, and succeeded in obtaining a ♀ imago from one of these, which was found on a species of Willow at North Branch. Sullivan Co., N. Y. on June 22nd 1876, it went under ground a few days thereafter and the moth emerged on August 22nd. As Mr. Lintner remarks, the larva bears a very sphinx-like appearance and is remarkably transparent, looking almost like porcelain. Knowing the larva of our species, I thought that a comparison of it with the larvæ of the European species would no doubt throw some light on the subject. I have received beautifully colored drawings of these, and have now no doubt that the three species are distinct.

The drawings, woodcuts of which I present herewith, were made from prepared larvæ and are said to be very accurate. The larvæ of both European species do not appear to be as slender as that of *Rimosa*.—



The larva of *Tremula* is as follows: head yellow with a red oval line on each side; body green dorsally, beneath salmon color, a yellow lateral stripe bordered above by salmon; legs reddish; last segment with an elevation and two black dots; shield salmon colored. There is however no approach to a caudal horn, whereas the larva of *Rimosa* has a well developed horn at maturity.



The larva of Dictaeoides is reddish brown with a wide lateral yellow stripe; legs reddish brown; the elevation on last segment is very slight, and a black dash on either side divides the last segment from the foregoing one.

I regret very much that I cannot at present add the figure of the larva of *Rimosa*, but hope to supply it at some future time.

I am not acquainted with Mr. Stretch's *Notodonta Californica*.

FRED. TEPPER.

Mr. J. F. Bancroft of Tyngsboro' Mass. recently while splitting up a large white oak which was infested with a large colony of black ants, collected about fifty specimens of **Atemeles cavus**, *Lec.* In my own experience I have found this species only very rarely, and I think most collectors have had no better success. May not the larva be parasitic on the young ants as Mr Sprague found **Aleochara anthomyiae** infesting larvæ of the cabbage fly? See Am. Ent. and Botanist vol. 2. p. 302 and p. 370.

Lowell, Mass. May 1st, 79. Frederick Blanchard.

GENUS COLIAS, *Fab.*

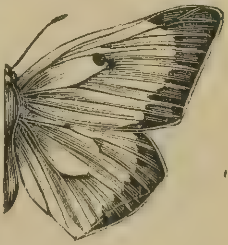
15. C. Scudderii, *Reak.* Male; upperside canary yellow with a slight greenish tinge on secondaries; marginal borders broad, black, veins yellow; discal spot of primaries small, black, subovate, of secondaries pale yellowish white; underside greenish yellow, the costa of primaries and whole of secondaries densely irrorated with fine black scales; discal spot of primaries white circled with black, of secondaries a silver spot edged with roseate scales in ferruginous ring. Female; upperside pale yellow, much irrorated with black along costal margin and apex and hind margin of primaries, but showing no regular band or spot; discal spots as in male; underside still more densely irrorated except along hind margin of secondaries, the disk having a greyish yellow shade. Fringes roseate. Expands 1.8 to 2 inches. Colorado, Montana, Utah, British Columbia.

Female albino variety.

16. C. Palæno, *Linn.* var: Chippewa, W. H. Edwards. Male; pale lemon yellow; borders black, extending on secondaries about ⅔ of outer margin; discal spot small, black, on secondaries white; underside of primaries, ground color same as above; secondaries greenish; discal spots pearl color. Female; ground color white, markings same as male, but heavier; fringes pink. Expands about 1⅞ inches. British America, Great Slave Lake.

17. C. Astraea, *W. H. Edwards.* Male; upperside orange ochraceous; borders black, medium width; discal spot of primaries a black streak, of secondaries pale orange or wanting; underside paler, no orange; secondaries densely powdered with black scales; discal spot white in fine ferruginous ring. Expands 2 inches. Female not known. Habitat, Montana.

18. C. Eurytheme, *E'dvl.* Male; ground color orange; borders broad black; discal spot large, black, on secondaries deep orange; underside of primaries yellow, light orange on center field, of secondaries bright yellow, discal spot black, white in center, of secondaries silver edged with ferruginous; a submarginal row of faint black spots on primaries, of pale brown ones on secondaries. Female; same as male; discal spots considerably larger; borders broader and enclosing irregular patches of yellow; underside of primaries same as male, of secondaries greenish; markings of both wings same as male, but heavier.



Var: Keewaydin, W. H. Edwards. generally smaller and paler than the typical Eurytheme.

Harfordii, Henry Edwards ?

Ariadne, W. H. Edwards, Yellow form of Eurytheme.

Female albino varieties.

Bull. Brookl. Ent. Soc. May 1879.

Expanse of Eurytheme 2 to 2⅜ inches, of Keewaydin 1⅝ to 2¼ inches, of Ariadne 1⅝ to 1¾ inches. Habitat, U. S.

19. C. Chrysotheme, *Esper.* Male; ground color pale orange, yellow along costa, black at base; borders black; discal spot of primaries brown, of secondaries large, orange; underside of primaries yellow; borders and whole of secondaries greenish; markings same as Eurytheme, but the discal spot on secondaries larger. Female; same as male, borders broader and macular; discal spot on primaries larger and black; below same as male. Expands 1⅜ to 1¾ inches. Habitat, Texas.

20. C. Meadii, *W. H. Edwards.* Male; ground color dull orange; borders broad, black; discal spot faint, black, sometimes bright orange, on secondaries a patch of orange; abdominal edge of secondaries greenish black; underside of primaries, basal patch light orange, borders greenish; of secondaries bright green; discal spot silver in red circle. Female; same as male; secondaries heavily dusted with black; borders enclosing irregular patches of yellow; underside same as male. Expands 1⅝ to 1¾ inches. Colorado, Montana, New Mexico.

21. C. Hecla, *Lef.* Both sexes much the same as the preceding, but paler; the yellow patches on borders in female are larger and more conspicuous. Expands 1½ to 2¾ inches. Greenland, Disco Island.

22. C. Boothii, *Curtis.* Male; greenish yellow, flushed with orange on the middle of wings; borders rather narrow, black; discal spot rather small, black, of secondaries orange; underside of primaries pale yellowish green, of secondaries dark yellowish green, paler along the outer margin; discal spot small, brown, of secondaries small, white, surrounded with obscure reddish brown. Female; like male, with the borders of primaries enclosing pale yellow patches; fringes and antennæ rose colored. Expanse same as Hecla. Arctic America.

23. C. Nastes, *B'dvl.* Male; dull green; borders black, on primaries sometimes macular; discal spot black, on secondaries whitish; underside of primaries paler, of secondaries deep green; discal spot of primaries a faint black ring, of secondaries white, surrounded with brownish scales. Female: same as male both above and below, but heavier marked; fringes roseate. Expands 1½ to 1⅞ inches. Labrador.

24. C. Behrii, *W. H. Edwards.* Male; upperside dark dull green, borders black; discal spot on primaries wanting, of secondaries white; underside brighter green; discal spots white. Female; same as male; border on primaries more suffused; below same as male; fringes of male whitish, of female pink. Expands 1½ to 1¾ inches. California.

BIOLOGICAL NOTES
ON SOME
GENERA OF TENEBRIONIDÆ.

BY CARL F. GISSLER.

How easily certain genera of Tenebrionidæ become adapted not only to an entirely different climate, but also to a but partially imitable medium, unlike their former manner of living, is drawn in the instance of *Eleodes gigantea, Mann.*—

Since fully two years these beetles live in one of my breeding cages.

Gonzales, Monterey Co., Cal. where they were collected, is situated in a beautiful valley, 30 miles from the Pacific Ocean

Snow is there an unknown thing; the rainy season begins in February and lasts till middle of April; the thermometer never sinks below 38° Fahrenheit.—

During the winter 1877–78 I kept the cage in a cold room and put it into a warmed room in January "79.

Every sudden change of temperature seemed to incite their sexual impulse, as I noticed that they copulated less in even temperature. They appeared to be similarly influenced on sprinkling the ground and moss on which they walk.

The oviposition occurs during the whole year, though it sets in more frequently in the later part of fall. I have not yet succeeded in obtaining the chrysalis-stage from the 40 mm. long larvæ, which are casting off their skin every five or six days.

For the same length of time I kept a single pair of *Coelocnemis magna, Lec.*, received from the same locality.

As a peculiarity I have to mention, that the small (23 mm. long) male rarely descend from the back of the larger (33 mm. long) female, which is not the case with Eleodes.

Both, male and female, possess the characteristic tibial groove with silky pubescence (see **Horn, Revision of U. S. Tenebrionidæ** p. 335); in the male the tibial tip is feebly thickened and I may add "slightly curved," which is also the case, though less defined, with the middle and posterior tibiæ in the same sex.

This curvature, together with the broadened intercoxal process of the abdomen and the "pedinoid" form of the elytral epipleuræ (this is lacking in Eleodes, except E. pedinoides), also the present sexual dimorphism,—all illustrate the law of **adaptation** to **inherited conditions.**

They frequently copulate, but neither eggs nor larvæ could be obtained.

A number of Nyctobates barbata, Knoch (from Florida), received in January "79, though often seen in copulation, do not seem to propagate, since their flattened body is only adapted to bark-life, a medium not so easily imitated in captivity.

It would be interesting to raise the latter beetle to see whether the first or second generation could not be transformed into Nyctobates pennsylvanica, DeG., inhabiting our northern climate.

On the excursion of the Brooklyn Ent. Soc. May 30th 1879. A fine abberation of Chrysophanus Americanus was taken by Mr. P. E. Nostrand. The specimen is normal in appearance except on the underside of the right hind wing, which is marked by red dashes running from base to exterior margin.

NEW PUBLICATIONS.

Dr. **HORN** in Trans. Am. Ent. Soc. VII. p. 137.

Revision of the species of Listrochelus of U. S. with n. sp. L. disparabilis Col. N. Mex. Ariz., L. opacicollis Ariz. N. Mex. Utah., L. sociatus Nev. Ido. Or., L. timidus Ariz., L. senex. Tex.

Synopsis of the Quediini of U. S. with descriptions of the foll. n. sp. Quedius desertus Cal. Ariz. Utah,, Qu. debilis Cal. Vanc., Qu. prostans Cal. Vanc., Qu. seriatus Vanc., Qu. puncticeps Vanc.

Synopsis of the Cychrus, see the extract in Bull. February 1879.

Synopsis of Staphilinus and allied genera with the n. sp. St. nigrellus Or. and N. Cal., St. rutilicauda Or., St. viridanus Can. N. Y. Mich. New Engl. States.

S. H. SCUDDER, Notice of the **Butterflies** collected by Dr. E. Palmer in S. Utah and N. Col. in 1877.—Bull. U. S. Geol. Survey IV. 254. Described as new : Neominois dionysus, Synchloe thoosa, Heteropterus libya.
Fossil Insects of the **Green River Shales** described 21 n. sp. of fossil coleoptera etc.

BULLETIN

—OF THE—

Brooklyn Entomological Society.

VOL. II. BROOKLYN, JUNE. 1879. NO. 2.

List of the described coleopterous larvae of the United States

with some remarks on their classification.

BY F. G. SCHAUPP.

Cincindela repanda, *Dej.* Dr. Horn l. c. p. 35. Color yellowish white, head piceous, thorax slightly bronzed. Length 16.5 mm. Eyes and spiracles same as in Tetracha.

Cicindela splendida, *Hentz.* Riley, report U. S. Ent. Commission 1877 gives p. 314 a figure of the larva and of the enlarged head.

Just as this was going into print, I succeeded in securing a number of larvae of different species of Cicindela, an account of which will be given in our next number.

CARABIDÆ.

The carabidous larvæ are very active, of an elongated form, they resemble each other and agree in their principal characters.

By the two claws on their feet they are easily distinguished from other ground larvæ.

The head is horizontal, elongate, flat above and slightly convex beneath; they have six ocelli (eyes) on each side; antennæ filiform, four jointed: the mouth of all carabidous larvæ (carnivorous as well as herbivagous) is only fitted for sucking; the mandibles are sharp, projecting. They have nine abdominal segments, and nine stigmata, the first beneath the mesothoracic scute, the last on the penultimate segment.

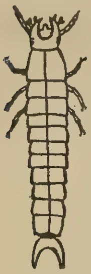
The larvæ of Carabus, Calosoma, Cychrus, Chlænius, Dicælus, Galerita, Badister, Licinus, Panagæus, etc., have the head very small, at least narrower than the body, while larvæ of other species have the head as broad as the body e. g. Harpalus, Pogonus, Dromius, etc.

The abdominal segment has usually a pair of conical, bristly appendages above and a prolongation beneath, which is used as propeller (proleg). Cychrus differs from other carabidous larvæ by having the pygidium instead of with two such appendages, strongly four toothed.

The larvæ live under stones, rotten leaves and wood, and in the earth, in the same obscure places as the imagines, but are very seldom seen Some, as Amara are double-brooded (according to Zimmermann), other hibernate in the larva or pupa state.

The pupæ are white, with the legs free, not concealed in a case, and make trembling motions with them, when touched or sprinkled with water. Some remain but a very short time in the pupa state, from five to ten days. See Bull. I. 44.

Calosoma calidum, *Fab.* Riley gives a figure of the larva in Report U. S. Ent. Comm. 1877, p. 314.



Calosoma scrutator, *Fab.* Chapuis et Candeze Catalogue des Larves etc., p. 371. Color dirty yellow; the corneous scutes above blackish brown, beneath lighter brown SEE FIG.

Galerita Lecontei, *Dej.* Salle. Ann. France VII. 298, Chapuis et Candeze l. c. 367. Head rufous, body black. The figure reproduced by Packard, Guide p. 433, is much exaggerated, but still recognizable.

Galerita janus, *Fab.* H. G. Hubbard, Psyche I. 49. Head rufous, body black, legs and anal appendages light brown.

I found this larvæ very slender and active, in July and August, 15 mm. long with the apical appendages of the same length; they remain in the pupa state eleven days. The figure given in Packard's Guide p. 713 is not very good, but not every one can furnish such excellent engravings of the larvæ as Schioedte does l. c., which are really the best I ever saw.

Dicaelus costatus or splendidus. Horn, Trans. Am. Ent. Soc. I. 43. Head reddish yellow, body dark greenish blue semiopaque, the ventral segments have each seven semicorneous plates. Length 22 mm.

(To be continued.)

METRIUS, *Esch.*

A broad, stout species of a very singular form, at first sight looking rather like a Heteromer, found under stones in forests see Lec. classification p. 10.

M. contractus, Esch. Zool. Atl. I. 8, t. 4. f. 4. 20-25 mm. Cal. Or. Wash. Terr.

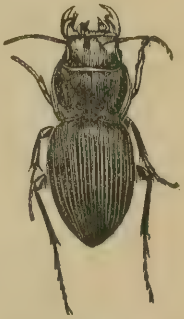
PROMECOGNATHUS, *Chaud.*

Elongate shining insects with smooth elytra and long mandibles.

Elytra one half longer than wide. **1. lævissimus.**
Elytra only about one third longer than wide. **2. crassus.**

1. *laevissimus*,, Dej. Spec. IV. II. Chaud. Bull. Mosc. 1146 p. 524. Length 10-11 mm. Cal.
2. *crassus*, Lec. Trans. Am. Ent. Soc. 1868 p. 62. Length 10.5-16 mm. Cal. Or.

PASIMACHUS, *Bon.*



Large species with antennae inserted under frontal plates; anterior tibiae palmate, hind angles of thorax distinct. They are usually found under stones or old logs, mostly on sandy places, in the Atlantic, Southern and Western States, but not on the Pacific Slope.

Leconte classifies them Bull. Buff. Soc. N. H. 1874 p. 266 ff. Cf. also Lec. Ann. Lyc. N. H., N. Y. 1848 p. 141-151, and Putzeys Monog. Mem. Liege II. 1846.

Elytra obtusely rounded behind; spine of middle tibiæ compressed, obtuse at tip.
  Hind angles of thorax rectangular, prominent, large. **1. strenuus.**
  Hind angles of thorax obtuse, not prominent, small. **2. sublævis.**
Elytra subacute behind; spine of middle tibiæ slender, acute.
  Prothorax not constricted at base.
    Hind angles obtuse and not prominent, large. **3. marginatus.**
    Hind angles rectangular and slightly prominent, small. **4. subsulcatus.**
  Prothorax more or less constricted, hind angles prominent, body more slender.
    Antennæ with joints 2-4 not carinate; elytra with fine rows of punctures arranged in pairs. **5. mexicanus.**
    Antennæ with joints 2-4 compressed and carinate.
      Hind tibiæ ♂ not densely pubescent on inner side.

Labrum broadly and feebly trilobed; elytra not sulcate, humeral carina moderate, hind tarsi long and slender. 6. depressus.

Labrum distinctly trilobed; elytra sulcate towards the sides, which are more narrowly margined.

  Less slender, elytral rows of punctures double or obsolete. 7. duplicatus.

  More slender, elytral rows single. 8. obsoletus.

Hind tibiæ ♂ densely pubescent on the inner side near the tip.

  Elongate, humeral carina long. 9. elongatus.

  Broader, humeral carina short.

    Humeral carina moderate. 10. punctulatus.

    Humeral carina very short. 11. californicus.

1. *strenuus*, *Lec.* Bull. Buff. Soc. N. H. 1874. p. 266. Length 35 mm. Fla.

2. *sublaevis*, *Bonelli.* Obs. Ent. 1813, 2d. p. 46.–rugosus, assimilis and substriatus, Lec. (intermediate variations). Length 21-28 mm. N. Y. to Fla. and Ills.

3. *marginatus*, *Bonelli.* l. c. p. 45. Length 32 mm. S. Ca., Tex., Fla., La.

4. *subsulcatus*, *Say.* Trans. Am. Phil. Soc. II. 19. Length 20 mm. Ga. Fla.

5. *mexicanus*, *Gray.* Griffiths, An. Kingd. p. 274, pl. XII. f. I.–viridans, Lec. Proc. Ac. Nat. Sc. 1858. p. 61. Length 26 mm. Mex. Ariz.

6. *depressus*, *Bonelli.* 1813. l, c. p. 45. (Scarites depressus, Fab. 1792. Ent. Syst. I. 94.) var. morio, Lec. Ann. Lyc. IV. 145. pl. VII. f. 2. without blue border; lævis, Lec. ibid. 146. Length 24-29 mm. N. Y.. La.–Ills.

7. *duplicatus*, *Lec.* Trans. Am. Phil. Soc. X. 395. var *costifer*, Lec. Proc. Ac. N. S, 1854. Length 25-29 mm. Tex. and Ind. Terr.

8. *obsoletus*, *Lec.* Ann. Lyc. 1848. IV. 148. Length 23 mm. Kans., Col.

9. *elongatus*, *Lec.* Ann. Lyc. " " 147. " 23-26 mm. Ills. Mo. Ks. Col.–depressus, Say. Trans. Am. Phil. Soc. II. 19.

10. *punctulatus*, *Hald.* Proc. Ac. N. Sc. 1843. I. 299. Length 29 mm. Ala. Tex. West. States, to Ills.

11. *californicus*, *Chd.* Bull. Mosc. 1850. II. 437.–punctulatus,‡ Lec. (nec. Hald)—validus, Lec.–corpulentus, Lec. Length 27–34 mm. Tex. to Utah and Col..

SCARITES, *Fab.*

Of the same form as the preceding genus, but narrower and the posterio angles of thorax wanting. Common under stones.

1. *subterraneus*, *Fab.* Mant. I. 206 Say. Trans.Am. Phil. II. 18.(with 10 synonyms). Length 15–20 mm. U. S.

2. *substriatus*, *Hald.* Proc. Ac. Phil. II. 54.=quadriceps, Chaud. Length 25–30 mm. Western and Southern States.

DYSCHIRIUS, *Bon.*

Contains species of small size, shining, often bronzed. They live in wet places on banks and shores, where they dig holes.

Synoptic table revised by Dr. J. L. Leconte.

Elytra with 3d stria or interspace tripunctate.

Epistoma bisinuate; basal stria of elytra entire.
Clypeus tridentate.
Antennæ black, thorax globose. **1. tridentatus.**
Clypeus with middle tooth obsolete, the lateral acute.
Antennæ and legs very black. **2. patruelis.**
Base of antennæ and posterior legs rufous. **3. basalis.**
Epistoma broadly emarginate, bidentate; basal stria of elytra wanting.
Front with slight or scarcely visible transverse impression.
Elytral striæ posteriorly distinct.
Thorax subtransverse, legs blackish. **4. integer.**
Thorax smaller, globose, legs black. **5. nigripes.**
Thorax smaller, globose legs black; elytral striæ strongly punctate. **6. consobrinus.**
Thorax globose, elytra with feeble, more sparsely punctured striæ, impressed behind the base. **7. gibbipennis.**
Thorax globose, elytra with deeply impressed slightly punctured striæ, interrupted before and behind the middle, forming two transverse smooth bands. **8. lævifasciatus,**
Front with deep transverse impression.
Elytral striæ very coarsely punctured in front, extending to base, not obliterated behind. **9. Dejeani.**
Elytral striæ extending to base, obliterated behind.
Thorax globose.
Elytral striæ feeble; antennae and legs black. **10. aeneolus.**
Elytral striae stronger; base of antennae and legs rufous. **11. longulus.**
Thorax transverse ovate, antennae and legs rufous. **12. globulosus.**
Elytra striae abbreviated anteriorly; antennae, legs and tip of elytra rufous.
Elytral striae obliterated behind.
Thorax transverse ovate, elytral striae strongly punctate. **13. haemorrhoidalis.**
Thorax quadrate globose elytral striae feebly punctate. **14. terminatus.**
Elytral striae not obliterated behind.
Thorax quadrate globose, elytral striæ strongly punctate. **15. analis.**

Elytra with 3d interspace bipunctate or impunctate, not margined at base.

Anterior tibiae not or scarcely dentate at the outer side.

Bronzed, head smooth, shining; legs rufous.

Apical spur of front tibiae very short; epistoma truncate.

Elytral striae coarsely punctured, obliterated behind. 16. brevispinus.

Apical spur of front tibiae long.

Elytral striae deep, entire clypeus bisinuate, tridentate. 17. sphaericollis.

Clypeus emarginate, bidentate; thorax elongate, much narrowed at base. 18. edentulus.

Elytral striae partly abbreviated at base.

Clypeus truncate, thorax ovate, transverse. 19. truncatus.

Clypeus truncate, thorax oval, not transverse. 20. erythrocerus.

Testaceous or rufous; head rugose, opake, elytra pale usually with a dark spot.

Large robust:

Thorax oval, sides regularly rounded. 21. marinus.

Thorax ovate, broader behind. 22. obesus.

Smaller, less robust:

Head rugose, thorax not longer than wide.

Angles of epistoma more prominent; body larger, less elongate. 23. sellatus.

Angles of epistoma less prominent; body smaller, more slender. 24. pallipennis.

Head not rugose, sparsely punctate; body slender, thorax longer than wide. 25. salivagans.

Anterior tibiae dentate at the outer side, 8th stria distinct at tip.

Elytral striae entire.

Ferrugineous, anterior tibiae with a strongly curved terminal spur. 26. curvispinus.

Elytral striae abbreviated in front; black bronzed, legs rufous.

Elytral striae not obliterated behind; very elongate; clypeus sharply bidentate. 27. filiformis.

Elytral striae slightly obliterated behind.

Thorax oblong, clypeus truncate. 28. sublævis.

Elytral striae obliterated behind.

Thorax ovate; clypeus sharply bidentate. 29. aratus.

Thorax ovate; clypeus truncate. 30. pumilus.

Thorax transversely subglobose, clypeus obtusely bidentate. 31. abbreviatus.

Elytra with 3d, 5th and 7th interspaces furnished with single rows of setigerous punctures.

Thorax short ovate, elytral striae faintly impressed, obliterated behind. 32. setosus.

Thorax globose, elytral striae impressed, the interior ones hardly entire. 33. pilosus.

Thorax globose and larger; elytral striae more coarsely punctured. 34. hispidus.

NOTES ON A TRIP TO FLORIDA.

BY GEO. D. HULST.

After a trip of a few weeks to the south, and a residence during the month of April about ten miles North of Enterprise Fla., and after consulting with several who have collected in various parts of Florida during the whole season I am able to make the following statements.

1. The months of June, July, and August are by far the best months for collecting Lepidoptera.—The single brooded species prevail as a rule in June.—Very many species however are double or many brooded, and increase greatly in numbers, and often in size, as the season advances. Catocalæ are most plentiful in the latter part of May and during June.

2. The immediate neighborhood of an old town is always the best collecting ground. Fire burns over a large portion of the unused lands each year away from the towns. And the growth of trees is so large, and where the fire spares, the undergrowth is so dense, that search for larvæ is difficult, and the chasing of the imagines is impossible or vain.

3. The so called "Hummock lands," (the fertile land, covered with a dense growth of various woods), afford a much better field for collecting than the high pine lands. The latter are burnt over every winter, and have absolutely, no underbrush. The ground has a covering only of wiry grasses and scattered plants generally perennial.—But the Hummock lands are very unhealthy during the summer season.

My own success was but very little. I was in the pine woods two miles from any undergrowth. And the Hummock lands afforded few specimens possibly, since last fall the St. Johns river was ten feet higher than ordinary, and some four feet higher than ever known before, the great bulk of the river bottoms were covered and of course butterfly life was destroyed. Compared with ordinary experience in the North after the beginning of May, my observations led me to the following summaries:

Butterflies and moths were very scarce.

Beetles were scarce, but there was a promise of an abundance of wood-boring beetles later in the season.

Dragon flies, Ant lions, Roaches and Ants were very plentiful, and grass hoppers were in great variety.

The Hymenoptera were just beginning house-keeping, but were plentiful.

Flies were not very common; Musquitoes not in great abundance. But fleas were very common, familiar and blood-thirsty.

ENTOMOLOGICAL NOTES.

BY F. M. WEBSTER, WATERMAN, ILLS.

Several specimens of **Leptotrachelus dorsalis,** *Fab.* were taken by the aid of a lamp and reflector.

Callida punctata, *Lec.* is quite common in this locality, its habits not differing from other Carabidæ, being taken by boards laid down in grassy spots. An old tumble down board fence has yielded a rich reward for an hour spent in overhauling it.

Bembidium sexpunctatum, *Lec.* took two specimens on margin of a small stream.

Helophorus lacustris, *Lec.* very common, have taken many specimens by dipping the hand into the water and gently raise it letting the water ooze out between the fingers.

Scymnus terminatus, *Say.* common in moss about the roots of trees in forests.

Hister bimaculatus, *Linn.* have taken two or three specimens in decaying wood.

Prionus imbricornis, *Linn.* very common, but have taken it only at night by aid of lamp, have never seen a single specimen during the daytime.

I took two specimens of **Xylotrechus convergens,** *Lec.* in this locality last season.

Many Carabidæ, Staphylinidæ, Curculionidæ, and such as do not fly or swim very readily, by visiting pastures after sudden storms have filled the hollows with water.

Various insects may be found climbing up or clinging to grass or weeds to escape the flood and be easily taken by the collector, including many which would otherwise escape notice.

An hour spent in this manner will well reward any one.

BULLETIN

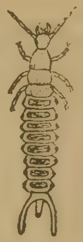
—OF THE—

Brooklyn Entomological Society.

VOL. II. BROOKLYN, JULY. 1879. NO. 3.

List of the described coleopterous larvae of the United States with some remarks on their classification.

(CONTINUED)



Dicaelus dilatatus, *Say*. Schaupp, Bull. Br'klyn Ent. Soc. I. 3. Resembles very much the last mentioned larva described by Dr. Horn, but differs by having the scutes of the segments black. Length 25 mm. Found in August under stones, they remain in the pupa-state seven or eight days.

D. elongatus, *Dej*. Schaupp, l. c. I. 43. Larva and pupa. Differs from the above by its smaller size, 17 mm. and by having the legs and apical appendages rufous. Found in July and August; remains in pupa-state ten days.

D. politus, *Dej*. Schaupp, l. c. I. 44. Somewhat darker than D. elongatus, legs and antennæ nearly black. Length 16 mm. Found in August; remain in pupa-state nine days.

Harpalus herbivagus? *Say*. Riley, 9th Report Mo. State Ent. 1876 p. 97.

H. obesa, *Say*. Riley, Report U. S. Ent. Comm. 1877 p. 290.

The larva of Pasimachus described by Dr. Leconte, Ann. Lyc. IV. 143 is according to Dr. Horn that of Amblychila.

During the present season I have raised from the larva

Platynus extensicollis, *Say*.
Pterostichus mutus, *Say*.
" stygicus, *Say*.

Chlænius laticollis, *Say*.
" leucoscelis, *Chevr.*
Cicindela 12 guttata, *Dej.*
" repanda, *Dej.*

A description will be given in following numbers.

DYTISCIDÆ.

The larvæ of this genus have also two claws on their feet, the legs being covered with swim-hair.

The head is above slightly convex and beneath flat, narrowed at the base; they have six ocelli; the mouth fitted for sucking, the mandibles have an oblong opening at tip. Antennæ are four-jointed, but in full grown larvæ they have laterally inserted joints, so that the number of joints is eleven.

They have one ventral segment less than those of the Carabidæ viz. only eight, and eight stigmata, the last being situated at the tip of the eighth segment near the anus; the first beneath the mesothoracic segment. The ventral segment is very elongate and also provided with swim-hairs.

They live in water, but pupate upon the shore and need more than one year for their transformation.

As far as I know no larva of any N. A. species of this family has yet been described.

GYRINIDÆ.

The larvæ have the feet with two claws and the abdominal segments with lateral processes (branchiæ). Head very small, oblong, flat, antennæ four-jointed, six eyes on a black spot, nine abdominal segments, and four hooks on the prominent anus.

The Gyrinus are said to depose their eggs on water-plants, the larvæ appear eight days later, at the beginning of August, the full grown larvæ leave the water and make a gray paper-like cocoon under the bark of old willow trees etc., and the imago develops one month after pupating.

(To be continued.)

Dorcus paralellus, was captured in 10 specimens, while boring their way out of a sugar-maple.

In a large stump of hard wood I found over 100 larvæ of *Orthosoma brunneum*, Frost. of different sizes.

F. G. S.

LARVÆ OF CICINDELÆ.

The larvæ of Cicindelæ are very common and when looked for in the right places may be taken in numbers and very easily.

So I can say now but previous to this season I looked in vain for them lying half days on sandy spots, digging and introducing straw into the little holes in the sand. But all in vain.

August 19th last I met on a bank of the North Branch of the Callicoon, a tributary of the Delaware, some feet distant from the river a clayey elevation, three to four feet high with bare face, covered with many little holes ("densely and deeply punctured" I might say) swarming with little hymenoptera.

The idea struck me: "that is a place like the one where Dr. Horn relates (Trans. Am Ent. Soc. VII. 31.) that Amblychila breeds." I began to dig, in two minutes I had one larva of a Cicindela and after one hour I had about 60 and two pupæ, one of which developed Aug. 30th and another Aug. 31st and proved to be Cicindela 12 guttata.

Aug 25th I went to Callicoon at the locality where I detected a few years ago Cicindela marginipennis and found there on a clayey elevation about two feet high in an hour about 50 larvæ of another Cicindela, head and prothorax different from those above, which proved to be Cicindela repanda; and at a bank, fresh broken a dozen larvæ of still another species, being about twice as large and having their holes not like the two previous close to each other, but rather distant. The holes of the above larvæ were from 3 to 6 inches deep.

Aug 27th I sought along the roadside and in the fields near the farm where I lived and where I used to find Cicindela vulgaris, and found in a short time a number of larvæ very much resembling the last mentioned large-sized ones.

I had four or five collecting boxes with me and when I arrived home half of the larvæ were devoured by their brethren.

They can walk and run very quickly and when touched at the abdomen they jerk around and often jump over six inches high. when touched at the head they bite and hang or stick at the finger so that they may be lifted up. When walking around and meeting each other they bite and fight in a fearful rage, often killing each other, head and prothorax being hard and corneous, while the abdomen is extremely soft and tender.

They make their holes (in captivity) in less than a minute, entering with the head and throwing the earth quite a distance, using head and prothorax like a shovel: as soon as the last abdominal segment disappears, they turn around and head and prothorax close the opening.

The larvæ at the roadside having somewhat deeper holes (12-18 inches) and the ground being hard, I and my friend A. Kœbele put into the holes some grass-stems, at the tip smashed, wetted and dipped in dust. The end was seized by the larvæ and then quickly drawing them out, we brought the larvæ clinging to the grass to the surface.

I raised the larvae in wine glasses and tin boxes filled with clayey sand, in which they made their holes. I fed them with common house flies and some larvae, moistening the earth a little every two or three days.

I hope that by this account some of our readers will be enabled to secure larvae of other species of Cicindelæ, and from them should like to get some alcoholic specimens in exchange.

F G. SCHAUPP

Inhabitants of a beech tree.

July 15th I chopped down a beech tree with the top dried up, but the lower branches with rich foliage. I found the whole inside rotten and the following insects infesting it: 3 *Osmoderma eremicola*, Knoch., 1 *O. scabra* (immature), Beauv., 2 *Thanasimus sanguineus*, Say., 4 *Parandra brunnea*, Fab., (one immature) 4 *Tomoxia bidentata*, Say., 5 *Tharops ruficornis*, Say., 3 pupæ of *Nyctobates pensylvanica*, Deg., (one developed July 28th), 15 large Lamellicornide larvæ evidently of Osmoderma, the latter not in the wood but in mould and earth; a number of larvæ with 25 *Clinidium sculptile*, Chevr.; Vespæ nearly mature and in larva and pupa state, a lot of small Staphilinidæ, snails, spiders, ants, etc.

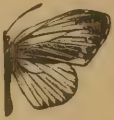
F. G. S.

Sphinx Cingulata, Fab. Larva found on Convolvulus at Locust Valley, L. I. One ♂ and one ♀ obtained; they emerged about July 15th.

NATHALIS, *B'dvl.*

Head comparatively large; palpi long, separate; antennæ short; body slight, as long as secondaries; wings slight, discoidal cell closed; the secondaries embrace a portion of the underside of the abdomen, the anterior border in the male with a small, oval, glandular, naked impression.

N. Iole, *B'dvl.* Wings yellow; primaries with a large triangular black patch at the tips, a broad black streak along the interior margin curving upwards towards the exterior margin; secondaries with or without a slight black border on the exterior margin, costal border black; underside of primaries yellow, a streak of orange running along the anterior margin, greenish grey at tips; the black streak on the anterior margin shows through, surmounted by two black spots near the exterior margin; underside of secondaries varying from yellow to greenish grey.

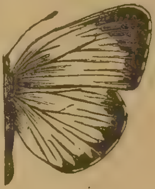


Expands 1 to 1 5-16 inches. Southern and Western States.

TERIAS, *Swain.*

Head short; eyes naked; palpi very short, covered with long hairs, scaly, last article small, thin, naked, much shorter than the preceding; antennæ slender, terminating in a conic club, slightly compressed laterally; body slender; prothorax very short; abdomen compressed, extending the length of secondaries; wings delicate, rather wide; discoidal cellules closed, primaries having the costal edge strongly arcuate towards the base, the secondaries embracing the abdomen below.

T. Lisa, *B'dvl.* Male; upperside, ground color canary yellow, with a small discal point on primaries; borders to both wings black, very broad at apex of primaries; underside bright yellow, sprinkled with obscure patches of ferruginous on secondaries; discal point on primaries shows through. Female; pale yellow; the borders on primaries do not quite reach the inner angle; on secondaries the border is represented only by a black patch on the anterior angle and by a few triangular points along the margin; below same as male, but heavier marked. Expands 1¼ to 1½ inches. U. S.



Female albino variety.

T. Delia, *Cram.* Male; upperside pale yellow, markings much the same as in ♀ Lisa with the addition of a broad black band extending from the base almost to the inner angle; underside of primaries light yellow, pink shadings along the costa at apex, the black band along the interior margin shows through, but is paler; secondaries faint pink. Female; same as male both above and below, the black band along the interior margin small and very faint. Expands 1¼ to 1⅝ inches. Gulf States.

T. Jucunda, *B'dvl.* Very close to the above, but can be easily distinguished by being white on the underside of secondaries, and having no pink on underside of primaries. Expands 1½ to 1⅝ inches. Gulf States.

We are inclined to consider Delia and Jucunda as forms of the same species, the difference consisting only in the presence or absence of the pink shadings on the underside. We have the same difference in closely allied species, T. Nicippe and T. Mexicana, and it is especially striking in varieties of Colias Cæsonia.

T. Westwoodi. *B'dvl.* Male; upperside chrome yellow, borders black; underside of primaries yellow, immaculate, of secondaries yellow, a black point near base, and two discoidal points of same color; across the disk a macular band, irregular, of brown atoms. Female; paler than male, with an orange tint along the hind margins of secondaries; the borders of primaries brownish, broader than in ♂; underside as in ♂ except that the apex of each wing has a patch of red ferruginous. Expands same as Nicippe. Texas.

T. Nicippe, *Cram.* Male; upperside bright orange, with broad black borders, broader on secondaries; discal spot on primaries black; underside pale orange, secondaries more or less strongly marked with ferruginous. Female; paler, borders broader, but more suffused; underside same as male. Expands 1¾ to 2 inches. New York to Gulf; Mississippi Valley. Arizona.

♂ and ♀ yellow variety.

T. Proterpia, *Fab.* Male; upperside bright orange, veins black and a slight border of pale brown, outer edge of secondaries angular in the middle; a broad black costal band on primaries; underside of primaries pale orange, of secondaries yellow. Female; uniform pale orange; the border on primaries is much like Nicippe, but extends further along the costa; border of secondaries black but slight; underside same as male. Expands 1¾ to 2 inches. Texas.

T. Mexicana, *Bdvl.* Male; upperside pale yellow; primaries with a broad black border on outer margin, interrupted near the middle by the ground color; secondaries, the middle of the exterior edge prolonged to a prominent angle, in the form of a tail; a slight border of black not reaching the internal angle; costal edge powdered with bright yellow; underside of primaries pale yellow, of secondaries yellow sprinkled with ferruginous, a transverse band of ferruginous. Female; same as male, but paler; the dentation in the black border of primaries more quadrangular. Expands 1⅜ to 1¾ inches. Texas to Arizona, California, Nebraska.

The uses of Cocoons.

Some time since, in a French Ent. magazine an article appeared, criticising the opinion which had been before advanced that cocoons served to keep the pupae in comparative warmth.
The writer took the ground that cocoons were for the purpose of protection, the insect in making them, mimicking dead leaves etc.

And he denied their use for warmth, as experiments had proved there was no practical difference in the temperature of the air within and without the cocoon.

This article has led to some thought upon the subject, and we are led to believe the following uses are obtained in the cocoons of insects.

1. It is probable that there is a slight addition to the temperature of the inside of the cocoon by the living body within it. Though of course, the quantity amounts practically to nothing, as proved by the experiments.

2. We do not believe in the mimicry theory. Mimicry does not explain everything otherwise inexplicable. All cocoons are not by any means the color of dead leaves; and very few have that appearance save by exposure to the weather. Very many are surrounded with dead leaves which serve to conceal, but the leaves seem to be chosen as a convenient basis for the framework of the cocoon and not for concealment. Small branches seem to be chosen even more freely, where they answer the same purpose.

3. Cocoons are without doubt of use in tempering rapid changes in temperature. We have roses, for example, which we protect in winter with a straw covering. This is not for heat, but to prevent death by the freezing and thawing of our early spring.
We think the cocoon answers the same purpose. Our experience shows, that a long winter of steady cold is much less destructive to pupæ than a changeable winter though on the average a warm one.

4. Cocoons are without doubt of use in preventing the loss of moisture by the pupa. The pupa of the Cecropia or Polyphemus moths, exposed to the atmosphere without its natural covering will as a rule dry up or produce an imago which will not have moisture enough in its tissues to properly expand its wings. This we have seen in numerous examples.

5. Cocoons are without doubt of use to conceal from enemies. 1st. Because, though noticed, they do not appear to birds like anything edible. 2nd. Because, if recognised as being edible, the tough parchment gives safety. 3rd. In many cases, because the odor of the pupa is not apparent through the air tight casing, and ants, mice and moles are not aware of the existence of the pupa, which otherwise they would secure.

6. Cocoons are probably of use in retaining the vitality of the pupa. Silk is one of the best of nonconducting substances. And electricity and the vital power seem to be akin. It seems probable that the nonconducting cocoon must serve to keep the vital force from waste during the long season of comparative inactivity. The experiments referred to above under heading 4 have as well proved that imagines emerging from pupæ which have been taken from their cocoons are deficient in vitality.

GEO. D. HULST.

NEW PUBLICATIONS.

In the "Verhandlungen des Vereins fuer naturwissenschaftliche Unterhaltung zu Hamburg of 1876" issued in March 1878, Mr. J. Boll of Dallas, Tex. has a very interesting paper on the Dimorphism and varieties of several N. A. Lepidoptera· His notes on Colias Eurytheme, B'dvl. Col. Ariadne, W. H. Edw., and Col. Keewaydin, W. H. Edw. are of special interest; he also forms the opinion that they are but forms of one species.

In the Annual Report upon Exploration and Surveys in the department of the Missouri by E. H. Ruffner, for 1878, Mr. H. Strecker describes Argynnis Kriemhild, nov. sp. from Rio Florida, Colorado; it is evidently closely allied to A. Bellona, Fab. and A. Epithore, B'dvl.

In the Bulletin of the U. S. Geological and Geographical Survey of the Territories, Vol. IV. No. 1 Feb. 5th 1878, Mr. A. R. Grote describes a number of new Noctuidæ, chiefly from California.

In Mr. H. Strecker's catalogue "Butterflies and Moths of North America" part I, p. 95, reference is made to the dark form of Lycæna Violacea, W. H. Edwards, with the remark that it is the prevalent ♀ form in Virginia. This, would not seem to be the case, the dark specimens found, as far as known, belonging to the ♂ sex. I have two specimens in my collection, both ♂ ♂. kindly sent me by Mr. Edwards, who informed me that he does not remember ever having seen a dark ♀.

FRED. TEPPER,

BULLETIN

—OF THE—

Brooklyn Entomological Society.

VOL. II. BROOKLYN, AUG. 1879. NO. 4.

List of the described coleopterous larvae of the United States.

(CONTINUED)

HYDROPHILIDÆ.

The larvæ of this family differ from those spoken of before by having but one claw on their feet (sometimes even wanting).

Head flat above, slightly convex beneath, easily bent upwards, antennæ in front, filiform, three jointed, the first joint the longest; ocelli six (some only five); mandibles falcate; maxillæ palpiform, interior mala wanting, eight or nine abdominal segments, stigmata eight. The abdominal segments are coriaceous, and so much wrinkled, that the number can by given only by counting the stigmata, bot not in such a degree, as given by Le Baron, etc.

They live on water-snailes, which they suck, having an exceedingly small mouth and no opening at the tip of the mandibles. No N. A. Hydrophilid larva has been described.

STAPHILINIDÆ.

These larvæ resemble very much those of the Carabidæ, but differ by having but one claw and but four ocelli on each side.

Head horizontal, somewhat convex above and flat beneath. Antennæ in front, four jointed, the third has at the inner side an inserted process. The mandibles are sharp, simple, arcuate; maxillæ moderately long, basal joint short and stout, and cardinal piece long, cylindrical; nine abdominal segments, and nine spiracles on each side; the last abdominal segment has a forklike appendage. They are very active and strong and live on other larvæ and soft insects, the smaller species live on fungi.

I fed a larva of Staph. maculosus with a caterpillar about 4 times larger than itself, the larva seized the caterpillar at the neck and was beaten around in the cage terribly by the jerkings and convulsions of the latter, but kept on, and sucked the contents of it.

Staphilinus maculosus *Grav.* F. G. Schaupp, Bull. B'klyn Ent. Soc. I. 42. Color castaneous, abdomen dirty white. L. 20-25 mm. Found in July ,August under stones; makes a nest and forms a brown shining chitinous pupa 14 mm. long, develops after 15 to 18 days.

Leistotrophus cingulatus, *Grav.* F. G. Schaupp, in lit. Very similar to the above, but much smaller, only 12–15 mm. long. Pupa also very similar ; developed after 11 days.

SILPHIDAE.

The larvæ of Silphidæ resemble those of Staphilinidæ, but differ by having six ocelli ; they are also somewhat broader.

Head horny, convex above, flat beneath, usually bent downwards ; antennæ at the sides of the head, four-jointed, the first short and thick ; mandibles short and strong, dentate. Maxillæ well developed, palpi three-jointed. Abdominal segments nine, chitinous above and fleshy beneath. Nine stigmata. Feet with one claw. They usually live under the surface of the earth on decaying animal matter, the fullgrown larva goes deeper and forms an oval cocoon, of which the imago developes after three to four weeks.

Silpha opaca, *Lin.*

Guerin, Ann. France 1846, t. IV. 2 ser. Bull. p. 72. Fairmaire, Ann. Soc. France 1852, ser2.

I should think the raising of Silphidæ would be a very easy thing ; and I shall try it next year. Take a box filled one foot deep with earth and covered by fine wirescreen. Place in it a dead mouse or bird and several specimens ♂ and ♀ of a Necrophorus or Silpha. Let the box remain in the yard or the garden ; after a week or so remove the imagines, larvæ and pupæ will be obtained.

SCAPHIDIIDAE.

I cannot give a description of the larvæ of this family, although I have raised those of Scaphidium piceum, (and its spotted variety). They were found in rotten linden logs and developed in July and August.

(TO BE CONTINUED.)

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2. *patruelis*, Lec. Ann. Lyc. V. 196=californicus, Men. L. 3.5 mm. Cal., Or.
3. *basalis*, Lec. Proc. Ac. Phil., 1857, p. 77. Length 3.25 mm. Cal.
4. *integer*, Lec. Ann. Lyc. V. 196. Length 3 mm. Rio Colorado, Cal.
5. *nigripes*, Lec. Proc. Ac. Phil. X. 396=apicalis, Lec. 3 mm. L. S.
6. *consobrinus*, Lec. Ann. Lyc. V. 196. Length 3.25 mm. Cal.
7. *gibbipennis*, Lec. Proc. Ac. Phil., 1857, p. 77. L. 4 mm. Cal.
8. *lævifasciatus*, Horn. Trans. Am. Ent. Soc., 1878, p. 52. L. 3 mm. Or.
9. *Dejeanii*, Putz. Monog. 545=punctatus Dej., Spec. V. 498. L. 3.25 mm.
10. *æneolus*, Lec. Agass. Lake Sup., p. 204. L. 3.5 mm. Can., Col., Cal., and Br. Col.
11. *longulus*, Lec. " " p. 204. L. 2.75 mm. Can.
12. *globulosus*, Say. Trans. Am. Phil., II. 23=parvus, Lec. 2.25–3 mm. Can.
13. *hæmorrhoidalis*, Dej. Spec. V. 511. L. 3.25 mm. Ks., Ohio.
14. *terminatus*, Lec. Ann. Lyc. IV. 212. L. 3.25 mm. Cal.
15. *analis*, Lec. Ann. Lyc. V. 196. L. 3 mm. Cal.
16. *brevispinus*, Lec. Proc. Am. Phil., 1878, p. 593. L. 3.4 mm. Mic., Ohio.
17. *sphæricollis*, Say. Trans. Am. Phil., II. 23. L. 5.5 mm. N. Y., Ill.
18. *edentulus* Putz. Monog. 569. L. 7 mm. Tex.
19. *truncatus*, Lec. Proc. Ac. Phil., 1857, p. 78. L. 5.5 mm. Ill.
20. *erythrocerus*, Lec. Proc. Ac. Phil., 1857, p. 78. L. 5 mm. Ohio, N. Y.
21. *marinus*, Lec. Ann. Lyc. V. 195. Journ. Ac. IV., t. 1, f. 12. Cal.
22. *obesus*, Lec. List, 1863. Proc. Ac. Phil., 1866, p. 363. Cal.
23. *sellatus*, Lec. Proc. Ac. Phil., 1857, p. 78. L. 4.5 mm. N. Y.
24. *pallipennis*, Say. Trans. Am. Phil., II. 24. L. 4 mm.
25. *salivagans*, Lec. Trans. Am. Ent. Soc., 1875, p. 179. L. 4 mm. Utah.
26. *curvispinus*, Putz. Monog. 561. L. 3 mm. Tex.
27. *filiformis*, Lec. Proc. Ac. Phil., 1857, p. 78. L. 3.5 mm. N. Y.
28. *sublævis*, Putz. Monog. 562. L. 3 mm. Tex.
29. *aratus*, Lec. Ann. Lyc. V. 196. 3 mm. Cal.
30. *pumilus*, Dej. Spec. I. 425=falciger, Lec. Proc. Am. Phil., 1878, p. 373 =dentiger, Lec. Proc. Ac. Phil., 1857, p. 79. L. 3–3.5 mm. N. Y., Pa., Fla.
31. *abbreviatus*, Putz. Monog. 532. L. 3.5 mm. Tex.
32. *pilosus*, Lec. Proc. Ac. Phil. 1857, p. 80. L. 3.5 mm. La.
33. *hispidus*, Lec. New Spec. I. 4. L. 3 mm. Tex.
34. *setosus*, Lec. Proc. Ac. Phil., 1857, p. 79. L. 3 mm. N. Y.

The following species are unknown to me: D. edentulus, Putz., curvispinus, Putz., abbreviatus, Putz., sublævis, Putz. which are, therefore, only placed provisionally. D. frigidus, Mann. Bull. Mosc., 1853, III. 123. L. 3.5 mm., and transmarinus, Mann. Bull. Mosc., 1853, III. 122. L. 3.5 mm., from Alaska, are also unknown to me.

Cfr. Putzeys Mem. Liege, II. 1846., Revision Putzeys, Ann. Soc. Belg., X., 1867, and Lec. Synopsis of Clivina, etc., Proc. Ac. Phil., 1857, p. 75 ff.

ARDISTOMIS, *Putz.*

Revised by Dr. J. L. Leconte.

Elytra striate, glabrous, black.
  Striæ not punctured.
    Antennæ, legs and apical spot of elytra rufous. 1. **obliquata.**
    Antennæ and legs piceous, 3d interval of elytra with 4–6 punctures. 2. **Schaumii.**
  Striæ punctured in front, obliterated behind. 3. **morio.**
Elytra with series of setigerous punctures; greenish black, antennæ and legs rufous.
  Thorax punctured only at the margin. 4. **viridis.**
  Thoracic disc with scarce punctures. 5. **puncticollis.**

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1. *obliquata*, Putz. Monog. 638. 7 mm. South.
2. *Schaumii*, Lec. Proc. Ac. Phil. 1857, p. 80. L. 5.5 mm. Fa. Fla.
3. *morio*, Dej. (Clivina) Sp. V. 506 etc. 8 mm. Ga.
4. *viridis*, Say. Trans. Am. Phil. II. 21. L. 5 mm. N. Y. Pa. Tex. =*rostrata*, Dej.=*vicina*, Putz.
5. *puncticollis*, Dej. Spec. V. 508=*oblongula*, Mots=*tantilla*, Mots. L. 5 mm. Fla.

ASPIDOGLOSSA. *Putz.*

A. subangulata, *Chaud.* Bull. Mosc. 1843. IV. 738.=*fraterna*, Putz. =*humeralis*, Chaud.=*vicina*, Putz.

Black, elytra striate, deeply punctate, 2nd interspace punctate; with a red spot near tip, antennæ and legs rufous. L. 7.5 mm. Tex. La.

CLIVINA. *Latr.*

Revised by Dr. J. L. Leconte.

Middle tibiæ with a spur near the outer tip, clypeus with lateral lobes.

Anterior femora dentate, near tip, paronychium very elongate. 1. **dentipes.**
Anterior femora not dentate, thickened, paronychium elongate.
  Vertex sulcate.
    Head smooth, punctured behind, vertical groove deep and long; entirely rufous. 2. **impressifrons.**
    Head punctured behind, vertical groove long, not deep; thorax smooth, rufous. 3. **texana.**
    Head punctulate, vertical groove short; thorax smooth; rufous. 4. **planicollis.**
    Head and thorax punctulate, rufous. 5. **punctulata.**
    Head " " " piceous. 6. **punctigera.**
  Vertex not sulcate, head and thorax smooth.
    Vertex foveate; basal angle of thorax dentate, rufous, depressed. 7. **rubicunda.**
    Vertex not foveate; basal angle of thorax simple; fusco rufous. 8. **pallida.**

Middle tibiæ without a spur on the outside of tip.

Clypeus with lateral lobes; anterior femora beneath deeply sinuate near tip; paronychium elongate: front foveate.
- Elytral striæ entire, finely punctulate.
  - Entirely rufous. **9. rufa.**
  - Rufous with a broad black suture. **10. collaris.**
  - Black, antennæ and legs testaceous, outer margin and suture at tip ferrugineous **11. analis.**
  - Black, legs rufo-piceous, antennæ rufous. **12. americana.**
- Elytral striæ obliterated behind; black, antennæ rufous.
  - Thorax quadrate, elytral striæ behind scarcely obliterated. **13. morula.**
  - Thorax ovate, striæ as in morula. **14. cordata.**
  - Thorax subquadrate, narrower in front, sparsely punctulate, paronychium shorter or wanting. **15. striatopunctata.**

Clypeus rounded at the sides; anterior femora thickened, not sinuate beneath; paronychium shorter or wanting.
- Vertex longitudinally sulcate; rufous; thorax elongate. **16. ferrea.**
- Vertex not or faintly sulcate.
  - Anterior tibiæ with one lateral tooth, the terminal tooth rectangularly bent.
    - Black, elytra maculate; thorax vaguely (dispersedly) punctate, paronychium very slender. **17. convexa.**
  - Anterior tibiæ with two lateral teeth, the terminal gradually curved.
    - Black; elytra maculate; thorax nearly smooth, paronychium wanting. **18. bipustulata.**
    - Black; elytra with margin and hind part of suture ferrugineous, thorax smooth. **19. marginipennis.**
    - Black; elytra maculate; thorax punctate, paronychium short. **20. postica.**
    - Black; elytra maculate; thorax smooth. **21. stigmula.**

Nos. 1 *to* 15 *have the elytra with several dorsal punctures, Nos.* 16 *to* 21 *with two or none.*

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2. *impressifrons*, Lec. Proc. Ac. Phil. II. 50. L. 6.5 mm. N. Y. Ky. Ks.
3. *texana*, Lec. New Spec. I. 4. L. 6 mm. Tex.
4. *planicollis*, Lec. Proc. Ac. Phil. 1857, p. 81. L. 6 mm. S. C., La.
5. *punctulata*, Lec. Ann. Lyc. V. 198. L. 5.25 mm. Cal.
6. *punctigera*, Lec. Proc. Ac. Phil. 1857, p. 81. L. 5.25 mm. S. C.
7. *rubicunda*, Lec. ibidem " " " L. 5.25 mm. La. ,Ga., Ill

8. *pallida*, Say. Trans. Am. Phil. II. 22=*rufescens*, Dej. Spec. V. 504. L. 5 mm. La.
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11. *analis*, Putz. Mon. 599. L. 4.8 mm. Tex.
12. *americana*, Dej. Spec. V. 503=*acuducta*, Hald. Proc. Ac. Phil. I. 299. L. 6 mm. N. Y.
13. *morula*, Lec Proc. Ac. Phil. 1857, p. 81. L. 4.6 mm. La.
14. *cordata*, Putz. Mon. 604=*ludoviciana*, Putz. Rev. 138. L. 5.25–6.25 mm. La.
15. *striatopunctata*, Dej. Spec. V 505=*picea*, Putz. Mon. 621. L. 5 mm. La. Ga.
16. *ferrea*, Lec. Proc. Ac. Phil. 1857, p. 81. L. 5 25 mm. Ill., Ks., Tex., Mo.
17. *convexa*, Lec. ibidem p. 50=*bisignata*, Putz. Mon. 620. L. 5 mm. La..
18. *bipustulata*, Fab. Syst. El. I. 125=4-*maculata*, Beauv. Ins. Afr. and Am. p. 107. L. 5.8–7.5 mm. N. Y., D. C., La., Fla.
19. *marginipennis*, Putz. Mon. 619 L. 6.75 mm. La.
20. *postica*, Lec. Ann. Lyc. IV. 213. L. 5.25 mm. La., Ks.
21. *stigmula*, Putz. Mon. 622. L. 5 mm. Tex.

Unknown: Cl. *sulcipennis*, Putz. Mon. 126.

SCHIZOGENIUS, *Putz.*

Revised by Dr. J. L. Leconte.

Mentum not toothed; lobes longitudinally truncate; elytra crenate-striate; 5th interstice not punctured.
  Blackish-rufous, cylindrical; 3d interstice of elytra tripunctate. 1. **crenulatus.**
Mentum toothed at middle; lobes obliquely emarginate; 5th interstice of elytra punctured.
  Elytral striæ feebly punctulate; rufous or purplish, strongly depressed. 2. **planulatus.**
  Elytral striæ punctate.
    Blackish-rufous; elytra somewhat depressed, striæ deeper, densely punctate. 3. **lineolatus.**
    Piceous or rufous; somewhat depressed, elytral striæ finely punctured, thorax longer and more oblong. 4. **Sallei.**
    Rufous; elytra cylindrical, striæ less deeply punctured. 5. **ferrugineus.**
    Rufous; elytra strongly depressed; thoracic angles prominent before the base. 6. **amphibius.**
    Dark rufous; elytra strongly depressed, thoracic angles not prominent. 7. **depressus.**
  Elytral striæ impunctate.
    Reddish black, elytra somewhat depressed, the interstices alternately with setigerous punctures. 8. **pluripunctatus.**

ABNORMAL LARVÆ.

During the season past we found the following in the larval state without the caudal horn.

Macroglossa thysbe, Fab.
Darapsa myron Cram.
" chœrilus, "
" versicolor, Harr.
Sphinx drupiferarum, Ab. & Sm.
" undulosa ,Walk.
Smerinthus geminatus, Say.
" myops, Ab. & Sm.

As is well known the larvæ of all these ordinarily have caudal horns.

In the most of cases the caudal horn was simply aborted. In the case of one larva of Smerinthus myops however there seemed to be a considerable part of the upper portion of the last segment gone. In each case there was every intermediate grade between the aborted and the normal form of the larva. The abortion was much more common among the Smerinthi.

We had also one example of a larva of Empretia stimulea in which one of the large fleshy processes was gone.

So far as the pupa have become imagines there has been no imperfection or loss observed as a result of the larval imperfection.

In one case this last summer the caudal horn of a larva of Darapsa versicolor was by accident cut short off. The larva had just passed the second moult. A drop of liquid matter escaped, but the larva took only temporary notice of its loss and no inconvenience seemed to be suffered by it in subsequent moultings. It never regained its caudal horn however.

There is we have noticed a great deal of variation in the ground color of larvæ and as well in the details of ornamentation. In the same brood there will be great difference in the depth of the ground color as e. g. in the Sphingidæ it takes every shade almost of green, sa e g. yellow pale and deep green.—And as well among these there are the larvæ with ground color brown becoming in some cases almost black. The ornamentation as well varies in the size of stripes and spots on the ground color. In the larva of Smerinthus myops for example sometimes the oblique lateral stripes are hardly discernible and often the red spots are wanting. At other times the markings are bright and distinct and the larva is blotched with rows of red spots. Our experience in the rearing of the Sphingidæ has shown that the tendency to the red markings is considerable more pronounced in the second or late summer brood of larvæ.

The variations however are rarely such as to make one mistake the species unless the normal forms of the larvæ closely resemble each other.

The generalisation which we draw from these variations and experiences is that very little emphasis can be given to minute differences in the proper determination of species.

GEO. D. HULST.

NEW PUBLICATIONS.

A. R. Grote. Descriptions of Noctuidæ, chiefly from California.

Bull. U. S. Geol. and Geogr. Survey Vol. IV., No. 1. Washington 1878. p· 169 to 188.

The new species described are :

Apatela pallidicoma, Mass., N. Y. ; *Agrotis janualis*, N. Y., A. *opacifrons*, N. Y., *A. apposita*, Vanc. I., *A. juncta*, U. S., *A. micronyx*, Cal., *A. mercenaria*, Tex., *A. idahoensis*, Idaho., *A. rosaria*, Cal., *A. evanidalis*, Cal., *A. eriensis*, N.Y., *A. atrifera*, Cal., Nev. *A.bicollaris*, Cal., *A. pluralis*, Nev., *A. albalis*, Nev., *A. Fishii*, Me., *Hadena vigilans*, Me., *H. cristata*, Harvey ms., N. Y., *H. ducta*, Me., *H. tusa*, Cal., *H, occidens*, Nev., *Dryobata opina*, Cal., *Arzama diffusa*, Me., *Ufeus unicolor*, Ill., *Graphiphora contrahens*, N. S., *Lithophane lepida*, Lintner, Me., *Xylomiges tabulata*, N. Y., *Tarache semiopaca*, Mont., *Annaphila divinula*, Cal, *Melipotis stigialis*, Ill., *Poaphila placata*, Ga., *P. irrorata*, Fla., *Zanclognatha mimialis*, Me., N.Y., *Dercetis* (new genus) *vitrea*, N. Y., *D. pygmæa*, Tex.

V. T. Chambers. Bull. U. S. Geol. Survey Vol. IV. No. 1. p. 79.

Descriptions of New Tineina from Texas, and others from more Northern localities.

Tineina and the footplants. l. c. p. 107 to 124.

Index of the described Tineina of the U. S. and Can. l, c. p. 125 to 168.

The N. A. ENTOMOLOGIST, Edited by A. R. Grote and published by Reinecke, Zesch & Baltz in Buffalo.

The first three Numbers appeared, and contain.

Leconte, New Coleoptera p. 1. describes Læmophlœus convexulus, N. Y. and Mich. Trogloderus, (n. g. of Teneb.) T. costata, Idaho. Amblyctes, (n. g. of Meloid.) A. praeses, N. Y.

Grote describes Zeugophora Reineckei, (Chrysomelide) and Apatela tota, Tex·

Bailey desc. Catocala Grotiana. Col.

BULLETIN

—OF THE—

Brooklyn Entomological Society.

VOL. II. BROOKLYN, SEPT. 1879–JAN. 1880. NO. 5. to 9.

ON A NEW SPECIES OF DATANA.

BY EDW. L. GRAEF.

We have in the U. S. six described species of Datana, which, although very closely allied can be easily distinguished in several stages of their existence. These species are: D. ministra, D. major, D. Angusii, D. integerrima, D. contracta and D. perspicua, and are all but the last named found on Long Island.*

I received this year from Florida (Mr. A. Kœbele) a species entirely distinct from any of the foregoing and give the following description:

Datana floridana, new species.

Size small and slight; wings entire. Color of primaries dark brown with a purplish flush.

Three indistinct dark brown transverse lines from costa to internal margin, the first distant about one fourth the extent of wing from base and slightly curved toward the latter, near the costa; the second close to the first but straight, and the third running from near the inner angle to costa, distant about one third the expanse of wing from apex and curved towards the base of wing. Central discal spot slight and oblong. Apical streak slight.

Secondaries pale reddish brown, darker near the margin. Fringes tinged with gray.

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* I would here call attention to the excellent article on this genus by Prof. A. R. Grote, in "Proceedings of the American Ent. Society," Phila., Vol. 6. page 8.

Beneath, primaries uniform pale reddish brown, secondaries the same, but paler.

Thoracic patch bright reddish brown edged inwardly with silvery gray. Abdomen pale reddish brown.

D. floridana can be easily distinguished from any of its congeners

1st. By having but three transverse lines, two of which are so faint as to be scarcely distinguishable, while none of the other species have less than four distinct transverse lines 2nd. By the silvery edge on the thoracic patch and 3rd. by the dark color and purplish flush on primaries.

Hab. Florida. Expands 48 mm.

MACROGLOSSA THYSBE, *Fabr.*

During the last spring we took several specimens of Macroglossa Uniformis. Eggs were deposited May 31st. In freedom they are generally deposited singly on the underside of the leaves of the sheep-berry (Viburnum lentago). In one instance, however, we found 10 eggs under one leaf.

The larvæ appeared June 7th; they passed the first moult June 11–12th; the second, June 13–14th; the third, June 16–17th; the fourth, June 21–22d. They left their food-plant, and began making cocoon June 29th. They pupated within cocoon two days later, and emerged July 15th as *Macroglossa Thysbe.* Fabr.

The larva in its general markings does not vary much through all its history.

The mature larva has the head deep green, large, closely sessile upon the body. The head is partially retractile beneath the first segment of the body. The body is nearly cylindrical, enlarging moderately from the first to the fourth segments. The first segment has a collar above, which is edged with yellow, and under which the head may be partially retracted. There is a sub-dorsal line extending from the head to the caudal horn—up to maturity it is yellowish, then becomes pale white. There is also an indistinct dorsal line of yellowish changing to white. The ground color of the body below the sub-dorsal line is clear deep green, above a blue green, deeper bluish toward dorsal line. Spiracles red spots, with a yellow dot above and below. Fore-legs red, the others vitreous, capped on outside with black, that with yellow. Body beneath pink between tenth and last segments. Caudal horn prominent, stout, curved backward, light blue in color with yellow and pink point. Larvæ varying from 30 to 50 mm. in length. Pupa very dark uniform brown almost black. Comparatively very active in this state. It is enclosed in a thin parchment like cocoon made under leaves on the surface of the ground.

There is much difference in the amount of red markings upon the larvæ. Some few are suffused with a crimson shade, and many are strongly marked with red forming dorsal and lateral stripes.

The former seemed to be of an albino character.

We cannot agree at all with the suggestion of Mr. Grote, that the larvæ seem to connect the insect with the Hesperians. It is a true sphynx larva. It does not more than the larva of Darapsa myron, and other sphinges resemble the larvæ of the Hesperians. It does not spin a web, or live in a webbed union of leaves during the larval state. It does pupate in a cocoon, but so do many Bombycidæ, Noctuidæ and Geometridæ, and so do the Darapsæ to which in cocoon and larval habits it is very similar.

It is two or more brooded in this latitude—generally, possibly always, only two brooded, though we found a full grown larva June 1st, which gave the insect a great plenty of time to go through all the transformations of two or more broods by the middle of August. At the same time one or two of a brood going into the pupal state about July 1st still remain in that state, while those of later broods freely emerged. This fact we have observed in the history of the Darapsæ also.

The size is, as with all insects, subject to much variation, and the specimens are made large or small, or, in other words, are made of the forms floridensis or uniformis almost if not quite at ones pleasure by different methods of rearing. Reared in a glass jar, with much moisture in the air, with high average temperature, and with plenty of food, and the result is floridensis; reared in the open air, with neglect in food, and the result is uniformis.

As it was, by rearing in the open air under practically the same circumstances, the spring form varied from 45 mm. to 56 mm. in expanse of wing. The Thysbe form varied much less in expanse than did the other.

The imagines of the Thysbe form varied in the same brood in the depth of the dentations on the inner margin of exterior band on the fore wings. One specimen was almost without dentations, and one had them reaching almost half way across the transparent space. There was also considerable variation in the shape of the fore-wing. In some, always male, the wings were narrower and more pointed than in others always female. This seems to be a sex difference, though the difference is very little in some cases.

In the most, before flight, the transparent costal spot was covered with scales so as to be entirely indiscernible. These were more or less lost upon flight, though more permanent than the scales at first covering the central transparent portion of the wings.

The synonymy of the species stands so far as determined as follows:

Macroglossa Thysbe, Fabr.
" *Pelasgus*, Cram.
" *cimbiciformis*, Stephens.

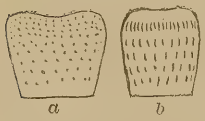
Dimorphic variety:

Macroglossa ruficaudis, Kirby.
" *uniformis*, Grote and Robinson.
" *buffaloensis*, Grote and Robinson.
" *floridensis*, Grote and Robinson.

The form from Florida called floridensis differing in nothing but size from ruficaudis is also found and more commonly, after the Thysbe form.

Whether Macroglossa fuscicaudis (Walk.) is a variety of this species or not is as yet undetermined. It seems probable, however, that it is an aberration rather than a variety; but is is pretty surely the one or the other.

Geo. D. Hulst.



Nyctobates pennsylvanica, *Deg.* and **N. barbata**, *Knoch*, resemble each other very much and as they are found both in the same localities, we give here figures of the mentum which present the best specific charaters by their shape and sculpture.

a. Mentum of N. pennsylvanica, coarsely punctured.

b. Mentum of N. barbata, clothed with hairs.

CARL FUCHS.

T. Gundlachia, *Poey*. Upper side red orange, the nervures black; primaries have a broad black costal border, which passes apex and is continued nearly to inner angle, diminishing from apex to a point at extremity; secondaries prolonged to a long pointed tail; under side paler; the costal margin of primaries and all of secondaries of a pale ferruginous tint; secondaries sprinkled with dark ferruginous scales, disposed in rays, one running the length of cell, and others irregularly across the nervules. Female paler above the black border on costal side narrow and ending at three-fifth the distance from apex to base. Expands 2 inches.—Texas.

T. Elathea, *Cr.* Much like Jucunda; the black band on primaries from base almost to inner angle is much narrower, and the color between the band and the inner margin is pale orange; the secondaries are almost white, and the black border is more pointedly edged inwardly; underside almost immaculate. Expands about 1½ inches.—Peninsular Florida.

This species should follow Jucunda, but at the time we were not certain of its occurrence in the United States. Since our last synopsis went into print, however, we have received a specimen taken in Florida.

GENUS HELICONIUS.—*Latr.*

Palpi extending a little beyond the clypeus, second article much longer than the first; antennæ long, filiform, gradually enlarging toward the extremity; wings oblong, narrow; abdomen elongate; four walking feet in both sexes.

H. Charitonia, *Linn.* Upper side black; primaries with three irregular bands of yellow; secondaries with two transverse yellow bands, the lower one of which is interrupted; below same as above, but paler; a few red spots near base. Expands 3⅛ to 3⅝ inches.—Gulf States.

GENUS DANAIS.—*Latr.*

Head narrower than the thorax; antennæ long, terminating in a club; palpi slight; white points on head, thorax, and breast; abdomen slender, nearly as long as secondaries; wings wide, the outer edge somewhat sinuate; the secondaries of the male have usually toward the anal angle a tubercle, placed on the extremity of the nervure.

D. Archippus, *Fabr.* Upper side orange-brown, veins black; borders black with irregular white spots, black bands at interior margin and costa of primaries; apex black with irregular spots of from white to deep orange-brown; underside paler, especially the posteriors; the white spots on border larger. Expands 3½ to 4¼ inches.—United States.

D. Berenice, *Cramer.* Upperside reddish chocolate brown, borders black, slightly spotted with white; two irregular rows of white spots on the disk of primaries; underside somewhat paleer; markings same as above, with the addition of a few white spots on secondaries; the veins on secondaries heavy, black. Expands 2⅞ to 3½ inches.—Southern States

Variety Strigosa, *Bates*. Same as the above, but has the veins on secondaries streaked with gray.—Southern States

The females of our Danaids can be easily distinguished by the absence of the tubercle on the vein on secondaries mentioned in the description of the genus.

GENUS COLÆNIS.—*Huebner.*

Slight insects, with characteristics approaching to Heliconius; head large; eyes prominent; antennæ long; body almost as long as secondaries.

C. Julia, *Fabr.* Upperside dark orange, borders black; a black band extends from costa to outer margin, forming between this and the border a large orange patch at apex; costa on secondaries silvery gray; underside pale ferruginous mottled with darker shading; a few red markings at base of wings. Expands about 3¼ inches.—Texas occasional.

C. Delila, *Fabr.* Much like the above, but paler and without the black band from costa to outer margin. Expanse same as Julia.—Texas occasional.

GENUS AGRAULIS.—*B'dvl., Lec.*

Head large; antennæ rather long, club flattened; abdomen shorter than the secondaries; discoidal cellule of the latter always open; primaries somewhat elongated, with the exterior margin sinuate; the secondaries denticulate.

A. Vanillæ, *Linn.* Male; upperside bright fulvous; veins on primaries black, very heavy near the apex; four black spots on the external margin, and three discal spots of same color; three irregular discoidal black spots pupilled with white; secondaries with a black border enclosing spots of the ground color; between base and outer edge three or four black spots; underside of primaries light orange; the black markings of upper side show through; apex brown, enclosing light silver spots; secondaries brownish with numerous irregular, mostly elongated bright silver spots and patches. Female same as male, but darker and more heavily marked. Expanse 2½ to 3¼ inches.—Southern States, California, Arizona.

GENUS ARGYNNIS.—*Fabr.*

Head large; antennæ rather long, abruptly terminated by a flattened club, grooved; palpi pilose, the first article slender, naked at its extremity and pointed; abdomen shorter than secondaries; wings sinuate or denticulate; ground color fulvous, usually with black points, forming sinuous, transverse lines; the under side usually has nacred or silver spots.

A. Diana, W. H. Edwards. Male; ground color deep chocolate, with broad borders of bright fulvous, broadest at apex; a row of marginal and sub-marginal spots of the ground color, the latter the heaviest; underside of primaries; ground color black with irregular patches of dark fulvous; of secondaries from base to beyond middle of wing dark fulvus; borders same as on upperside but paler; on the inner edge of this border as well as on the outer are rows of nacred crescents.

SYNOPSIS

OF THE NORTH AMERICAN SPECIES OF

PLATYNUS, BON.

BY

John L. Leconte, M.D.

From the Bulletin of the Brooklyn Entomological Society.

VOL. II. NOV. 1879.

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SYNOPSIS OF THE N. A. SPECIES OF **PLATYNUS**, *Bon.*

By John L. Leconte M.D.

A.—Elytra oval, without humeral angles; metathoracic side-pieces short, not much longer than wide. Prothorax ovate, narrowed behind, strongly margined at the sides. Pubescence of antennæ beginning on 4th joint.

a.—Front tarsi with medial grooves on upper surface; hind and middle tarsi with lateral grooves. Hind angles of prothorax well defined. Elytra obliquely sinuate at tip, sutural points divergent; color brown; legs and antennæ paler. *Rhadine*, Lec.
Third joint of antennæ much longer than fourth.
Sutural angles less acute. **1. larvalis.**
" " very acute and divergent. **2. caudatus.**
Third joint of antennæ but little longer than fourth; sutural angles less acute, slightly divergent. **3. dissectus.**

b.—Front tarsi without grooves, middle and hind tarsi with lateral grooves. *Platynus*, auct.
Front tarsi of male very narrow, 1st joint much longer. 2.
" " " wider, 1st joint not much longer. 4.
2.—Front tarsi with terminal spur large; striæ of elytra fine, impunctured; sutural tips divergent, not acute; color entirely black; hind angles of prothorax not rounded. **4. jejunus.**
Front tarsi with terminal spur fine; hind angles of prothorax rounded; striæ of elytra deep. 3.
3.—Antennæ and legs ferruginous; alternate interspaces of elytra with numerous punctures. **5. hypolithos.**
Antennæ and legs black; 3d interspace of elytra with 4 punctures. **6. angustatus.**
4.—Smaller, brown, hind angles of prothorax not rounded, elytral striæ fine, 3d interspace with 3 punctures; tips of elytra feebly obliquely sinuate **7. agilis.**

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B.—Elytra with broadly rounded humeral angles; side-pieces of metathorax longer than wide: prothorax narrowed behind, hind angles usually not rounded; pubescence of antennæ beginning on fourth joint; front tarsi without grooves, middle and hind tarsi with lateral grooves.

Wings wanting; elytra scarcely sinuate behind, sutural angles separately rounded. 2.
Wings well developed. 3.

2.—Prothorax ovate, sides strongly margined, hind angles rounded; elytra deeply striate, dorsal punctures 3 (accidentally 4). **8. maurus.**
Hind angles of prothorax obtuse but less rounded, elytra broader. **9. ovipennis.**

3.—Form not very slender; elytra obliquely sinuate at tip, striæ deep, dorsal punctures 3; prothorax strongly margined, hind angles not rounded. 4.
Form slender, antennæ and legs very long; elytra obliquely sinuate at tip, striæ fine, dorsal punctures 3, (in *a* of sp. 15 there are 4); prothorax strongly margined, hind angles obtuse but not rounded. 5.

4.—Larger and more depressed, elytra more deeply sinuate behind; hind angles of prothorax obtuse, not prominent; metathoracic episterna not punctured. **10. decens.**
Less depressed, hind angles of prothorax rectangular; metathoracic episterna punctured. **11. sinuatus.**
More depressed, subopake; elytral striæ less deep, interspaces nearly flat; hind angles of prothorax obtuse, slightly prominent; metathoracic epimera much narrower, not punctured. **12. opaculus.**

5.—Very slender; hind angles of prothorax almost rounded. **13. tenuicollis.**
Less slender; hind angles of prothorax almost rounded. **14. cincticollis.**
Less slender; hind-angles of prothorax obtuse, not rounded, side-margin more widely reflexed.* **15. reflexus.**
var. a. Elytra with 4 dorsal punctures.

C.—Elytra with broadly rounded humeri; hind angles of prothorax obtuse or rectangular, not rounded; lateral grooves distinct on all the tarsi.

Prothorax narrowly margined. 2.
Prothorax widely margined, hind angles rectangular not prominent; tarsi without medial groove; dorsal punctures 3; black margin of prothorax translucent. **16. brunneomarginatus.**
var. a. Head, prothorax, antennæ and legs brown; *bicolor*,‖ Lec.

2.—Dorsal punctures 5–7; tarsi without medial groove; green, blue or dull piceous-bronze, base of antennæ, palpi and legs frequently testaceous. 3.
Dorsal punctures 3; hind angles of prothorax prominent usually rectangular. 9.

3.—Color green or blue, base of antennæ, palpi and legs ferruginous. 4.
Color black bronzed. 6.
Color mostly piceous or piceo-testaceous. 7.

4.—Basal impressions of prothorax small, narrow. 5.
Basal impressions of prothorax deep. **17. extensicollis.**

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* *This species is refered to COLPODES by Chaudoir, Ann. Ent. Fr.* 1859, *p.* 328.

5.—Prothorax blue or green. 18. **simplex.**
Prothorax more or less yellow, elytra finely and sparsely punctulate. 19. **decorus.**

6.—Legs black, hind angles of prothorax more distinctly defined. 20. **californicus.**
Legs black, hind angles of prothorax less distinct. 21. **floridanus.**
Legs piceo-testaceous, knees and tarsi darker. 22. **texanus.**

7.—Sides of prothorax not sinuate towards the base. 8.
Sides of prothorax sinuate, color greenish and testaceous; elytral punctures strong. 23. **bicolor.**
Sides of prothorax subsinuate; elytral punctures small; color piceous, base of antennæ and legs testaceous. 24. **piceolus, n. sp.**

8.—Color greenish, base of antennæ, sides of prothorax, elytra and legs testaceous. 25. **anchomenoides.**
Color brown (closely related to 27.) 26. **ferruginosus.**
Color black, sides of prothorax less reflexed, not sinuate, elytral striæ very fine. 27. **erasus, n. sp.**

9.—Tarsi without medial grooves; color brassy black. 10.
Tarsi with medial grooves. 11.

10.—Hind angles of prothorax rectangular, basal impressions rugose. 28. **æneolus.**
Hind angles of prothorax obtuse, basal impressions not rugose. 29. **quadratus.**

11.—Depressed, black, opake. 30. **funebris.**
var. a. Shining, *micans*, Ménétriés.
Convex, piceous, antennæ and legs pale. 31. **clemens.**

—o—

D.—Elytra with broadly rounded humeri; prothorax with hind angles much rounded, rarely obtuse and somewhat defined; side margin wider towards the base and reflexed; tarsi with distinct lateral, but no medial grooves.

Prothorax transversely oval, or rounded, rarely subquadrate; elytra not deeply emarginate at base. 2.
Prothorax transverse, narrower behind, hind angles very obtuse and rounded, side margin narrow, basal impressions broad and shallow; elytra deeply emarginate at base. 28.

2.—Black, rarely metallic; dorsal punctures 3; hind angles of prothorax much rounded. 3.
Metallic, prothorax longer and more narrowly margined, base of antennæ and legs ferruginous or brown; 4th tarsal joint without grooves. 16.
Dull black, 4 outer joints of antennæ white. 20.
Antennæ and legs usually yellow; and prothorax and elytra more or less yellow; side margin of prothorax narrow, dorsal punctures 5-7; tarsal grooves nearly obsolete. 21.

Antennæ and legs brownish yellow; color piceous, prothorax subquadrate, sides broadly flattened behind, angles rounded at tip, base bisinuate; elytra finely striate with 4-6 dorsal punctures; tarsal grooves indistinct. 22.

Black or bronzed, sides of prothorax broader and more reflexed behind; dorsal punctures 4-7. 23.

Brassy green; base of antennæ, palpi and legs yellow; hind angles of prothorax distinct, obtuse; basal impressions deep, slightly punctured. 32. errans.

var. a. Darker bronze, base of antennæ and legs almost piceous; elytral striæ distinctly punctulate; *subcordatus*, Lec.

3.—Prothorax with side margin wider and strongly reflexed near the base. 4.

Prothorax with side margin only narrowly reflexed at the edge. 8.

4.—Elytral striæ fine, interspaces flat 5.

Elytral striæ deep. 6.

5.—Hind angles of prothorax obtuse, rather distinct. 33. mœrens.

Hind angles of prothorax entirely rounded. 34. tenuis.

6.—Elytral striæ feebly punctulate. 7.

Elytral striæ strongly punctured: hind angles of prothorax entirely rounded. 35. collaris.

7.—Hind angles of prothorax entirely rounded (*molestus* Lec.) 36. atratus.

Hind angles of prothorax very obtuse, but distinct. 37. melanarius.

8.—Second and 3rd dorsal punctures near or on 2nd stria 9.

All three punctures on 3rd stria. 12.

Second puncture on or near 3rd stria; 3rd on or near 2nd stria. 13.

9.—Dark colored or black species. 10.

Bright metallic above. 15.

10—Smaller species. 11.

Larger species, 5th stria frequently deeper behind. 12.

11.—Blackish, elytra piceous; hind angles of prothorax rather distinct. obtuse; *piceus*,‖ Lec. 38. propinquus.

Black bronzed, hind angles more rounded. 39. fraterculus.

12.—Hind angles somewhat distinct, impressions without a tubercle (*Harrisii* Lec,) 40. afinis.

Hind angles more rounded, impressions with a distinct tubercle 41. carbo.

13.—Hind angles entirely rounded. 42. corvus.

Hind angles obtuse, distinct. 43. frater.

14.—Black bronzed, basal impressions with a distinct tubercle; hind angles indistinct. 44. metallescens.

Black bronzed, basal impressions without tubercle. 45. deceptivus, n.sp.

15.—More or less golden-green. 46. cupripennis.

var. a. Elytra green, without coppery disc. *A. nitidulum*, Dej.

var. b. Golden bronze, larger and flatter, basal impressions of prothorax faintly tuberculate.

Bronze, basal impressions with a small tubercle. 47. Hardyi.

Bronze, dorsal punctures large, foveate. 48. excavatus.

16.—Basal impressions of prothorax small. 17.
Basal impressions deep, punctured; elytral striæ strongly punctured, dorsal punctures 3; bronzed-black, antennæ, tibiæ and tarsi brown. **49. ferreus.**
17.—Elytral striæ impunctured. 18.
Elytral striæ punctured, dorsal punctures 5. 19.
18.—Legs yellow; dorsal punctures 3. **50. basalis.**
Legs yellow, thighs darker; dorsal punctures 5–6. **51. nutans.**
19.—Prothorax slighty wider than long. **52. striatopunctatus.**
Prothorax longer than wide. **53. crenulatus.**
20.—Thighs dark, tibiæ and tarsi yellow: dorsal punctures 3. **54. albicrus.**
Legs ferruginous; dorsal punctures 5. **55. picticornis.**
21.—Dorsal punctures 5–7, large: sides of prothorax and elytra yellow. **56. maculicollis.**
var. a. Entirely blackish piceous.
Dorsal punctures 5–7, small: elytra piceous with metallic gloss. **57. variolatus.**
22.—Base of prothorax strongly emarginate. **58. sulcatus.**
Base of prothorax feebly emarginate. **59. striatus.**
23.—Dorsal punctures large, foveate. 24.
Dorsal punctures of usual size. 25.
24.—Coppery bronze, antennæ and legs black. **60. perforatus.**
Green-bronze, not shining, base of antennæ and legs brown. **61. octopunctatus.**
25.—Antennæ and legs entirely black, side margin of prothorax narrow. 26.
Base of antennæ brown, sides of prothorax more reflexed. **62. placidus.**
26.—Hind angle of prothorax much rounded, color bright-bronze. 27.
Hind angles obtuse, rounded; color black, feebly bronzed. **63. fossiger.**
Hind angles of prothorax obtuse, not rounded: color green bronze, not shining: form more depressed. **64. deplanatus.**
27.—Prothorax narrower than the elytra. **65. cupreus.**
Prothorax not narrower than the elytra. **66. crassicollis.**
28.—Elytra with 3 small dorsal punctures. 29.
Elytra with 4–5 large foveate dorsal punctures. 30.
29.—Elytral striæ deeper, apex subtruncate, *consimilis*,‖ Lec. **67. vicinus.**
Elytral striæ finer, apex obliquely sinuate. **68. obsoletus.**
30.—Smaller, subopake, dorsal foveæ 4. **69. quadripunctatus.**
Larger, surface mottled, dorsal foveæ 5. **70. bembidioides.**

——o——

E.—Prothorax rounded-oval, margin very narrow, basal impressions punctiform, elytra with 3 dorsal punctures.

Tarsal grooves wanting: 2.
Tarsal grooves on 1st joint; piceous bronze, striæ of elytra very fine. **71. æruginosus.**
Tarsal grooves on 1st and 2nd joints; black, legs brown, elytral striæ feebly punctured. **75. punctiformis.**

2.—Black, legs red. 3.
Black, base of antennæ, palpi, legs and sides of prothorax and elytra yellow. 72. **limbatus.**
3.—Striæ of elytra strongly punctured. 73. **crenistriatus.**
Striæ of elytra feebly punctured. 74. **rubripes.**

——o——

F.—Prothorax oval, margin narrowly reflexed, hind angles rounded, pubescence of antennæ beginning on 3rd joint; elytral striæ fine, dorsal punctures 4–6 small; tarsal grooves indistinct.

Prothorax not longer than wide. 2.
Prothorax longer than wide; legs testaceous. 3.
2.—Legs testaceous: color piceous with brassy gloss. 76. sordens.
Legs and antennæ dark; tibiæ and tarsi sometimes piceous: color black. 77. picicornis.
3.—Prothorax narrower behind; with side-margin more widely reflexed. 4
Prothorax elongate-oval, side-margin uniformly narrow. 5.
4.—Antennæ darker at base, paler externally. 78. ruficornis.
Antennæ uniform rufo-testaceous. 79. retractus.
5.—Black, antennæ piceous, size larger. 80. gemellus. n. sp.
Black, antennæ, legs and elytra piceo-testaceous. 81. picipennis.
Black, colored like *picipennis*, but prothorax also piceo-testaceous. 82. lutulentus.

——o——

G.—Prothorax elongate-oval, truncate before and behind, margin very narrowly reflexed: pubescence of antennæ beginning on the 4th joint; elytra with fine striæ, dorsal punctures 4, small, tips not sinuate; tarsal grooves indistinct: the last joint of the maxillary palpi is longer and more ovoid than in the other species, and the claws are larger. Otherwise it is closly related to F.

Elongate, testaceous, head black; prothorax with a longitudinal dark stripe; hind angles rounded: scutellum and sometimes the suture dusky. 83. nigriceps.

REMARKS.

On careful study the genus *Anchus* established by me (Proc. Ac. Nat. Sc. Phil. 1854, 38.) upon a singular insect, *A. pusillus*, and afterwards united with Platynus, seems not only worthy of being adopted, but even transferred from the tribe Platynini to Anchonoderini. The prothorax at base is cylindrical, with but slightly prominent hind angles, and the elytra are not sinuate at tip. Although the palpi are more slender than in *Anchonoderus*, the punctured surface, and the characters above mentioned indicate the propriety of its removal from Platynus.

I have retained as distinct in the table certain species with rather indefinite characters, which larger series, and better knowledge of geographical distribution will hereafter cause to be placed as varieties or races.

They are as follows

1. Sp. 17 and 18. *P. extensicollis* and *simplex*, which differ only in the comparative depth and size of the basal impressions of the prothorax.

2. Sp. 20, 21 and 22. *P. californicus*, *floridanus* and *texanus*. I consider these as slight modifications of a single species, having the same distribution as several other less plastic forms of Coleoptera, which I have noted on a former occasion, (Proc. Am. Phil. Soc. 1878, 470). In the present condition of science, I am not warranted in including them under the earliest name, *californicus*.

3. Sp. 52 and 53. *P. striatopunctatus* and *crenulatus*, the series before me is hardly sufficient to warrant me in uniting these forms, though I but little doubt that it must eventually be done, and I have therefore not changed the names in accordance with the suggestion of Baron Chaudoir, (vide Trans. Am. Ent. Soc. 1869, p. 248),

4. Sp. 73, 74 and 75. My series is almost large enough to indicate that these three, *P. crenistriatus*, *rubripes* and *punctiformis* should be united under the last name, which has priority.

The following names are unnecessary and should be dropped :

P. bicoloratus Munich Cat. 368, proposed for P. bicolor,‖ Lec. which (No. 16, *var. a.*) is a color variety of *brunneomarginatus*.

P. mutatus, ibid. 374, is proposed for *P. atratus*, Lec. Agassiz Lake Superior, 205. (1847), while *atratus*,‖ Blanchard, (1853) is allowed to remain.

P. tenebricosus, ibid. 377, is proposed for Anch. marginatus,‖ Menetr. Bull. Petrop. II, 56, which is=*brunneomarginatus*, Mann. Bull. Mosc. 1843.

The following names are valid corrections, and worthy of being adopted.

P. propinquus, Munich. Cat. 375.=*Anchomenus piceus*,‖ Lec. The duplication of name was produced by the merging of Anchomenus and Agonum into Platynus, but by inadvertence was not noticed by me. No. 38.

P. vicinus, Munich Cat. 377,=*P. consimilis*,‖ Lec. (No. 67).

The following are unknown, or not identified:
Feronia maculifrons, Say. Journ. Ac. Phil. III. 146.
Anchomenus exaratus, Mann. Bull. Mosc. 1853. III. 143.
Limodromus interstitialis, Motsch. Bull. Mosc. II. 318.
" acuticollis, " " " 1864, II, 319.
Europhilus iridipennis, " " " " II, 321.
Anchomenus rugiceps, Mann. Probably an individual variation of *P. brunneomarginatus.*

Species common to both continents.

P. bicolor, No. 23.

P. impressus, (*Panzer*); fide Munich Cat. 372. Sitka. Compare *P. perforatus,* Lec. No. 60.

P. parumpunctatus, (Fab.); fide Munich Cat. 374:=Agonothorax planipennis Motsch. Sitka.

P. Bogemanni (Dej.) This species is said to occur in Alaska: A Swedish specimen examined seems to differ from *P. obsoletus,* only by the prothorax being a little less transverse with the hind angles less completely rounded. I have omitted the name from the synoptic table as I do not feel satisfied with the comparisons I have made.

DESCRIPTION OF NEW SPECIES.

24. *Platynus piceolus.* Of the same form and size as *P. bicolor,* shining dark piceous, with a slight metallic lustre. Antennæ fuscous, 1st joint, base of palpi, legs and epipleuræ piceo-testaceous. Prothorax a little wider than the head with the eyes, scarcely wider than long, narrower at base than at apex, sides rounded in front, oblique behind, strongly margined, front angles slightly acute, hind angles obtuse and somewhat rounded: anterior impression deep, dorsal line fine,not abbreviated, basal impressions deep. Elytra oblong-oval, wider than the prothorax, humeri rounded, base emarginate, apex obliquely truncate and but feebly sinuate: striæ fine but well marked, interspaces nearly flat, 3rd with from 4–5 punctures. Length 7 mm.

Oregon and British Columbia: three specimens. Differs from *P. bicolor* by darker color, by the the sides of the prothorax being more widely margined and strongly reflexed, and less sinuate near the base.

27. *P. erasus.* Of the same form and size as the preceding but entirely black shining. Prothorax not wider than the head with the eyes, hardly as wide as long, narrower at base than apex, sides rounded in front, oblique behind; margin narrower, slightly reflexed near the base: front angles rounded, hind angles obtuse, but scarcely rounded at tip: anterior transverse impression deep, dorsal line deep, abbreviated in front, basal impressions moderate. Elytra wider than the prothorax, elongate-oval. base emarginate, humeri rounded, apex not sinuate but rounded, sutu-

ral angle also rounded: striæ fine, outer ones obliterated: 3rd interspace with 5 or 6 punctures. Length 6 mm.

Vancouver Island, two specimens; in one specimen all the dorsal punctures are large, in the other only the anterior one is large, and the rest are small and hardly visible.

45. *P. deceptivus.* Shining black, with a distinct brassy lustre: quite similar in form and color to *P. metallescens.* Prothorax wider than long, rounded on the sides, emarginate in front, broadly rounded at base, front angles acute, rounded at tip, hind angles obsolete: front transverse impression distinct, dorsal line fine, obsolete near the base: basal impressions broad, moderately deep, without tubercle: side-margin narrow, more distinctly reflexed behind, and extending a short distance along the base. Elytra wider than the prothorax moderately convex, oblong-oval, emarginate at base, obliquely but slightly sinuate behind: striæ narrow, deep, impunctured, interspaces wide, slightly convex; dorsal punctures 3, the 1st on the 3rd stria, the 2nd near the 3rd, and the 3rd on the 2nd stria. Length 6.5–7.5 mm.

Nova Scotia and Lake Superior. This species seems distinct enough by the metallic lustre, large and concave impressions, and position of 2nd dorsal puncture near the 3rd stria. The 5th stria is frequently more strongly impressed near its posterior extremity, as in *P. affinis.*

47. *P. Hardyi.* Under this name I have received from Baron de Chaudoir, a species which is more robust than P. cupripennis, and usually smaller. Bronzed, greenish on the head and prothorax, tinged with coppery on the elytra. Antennæ and palpi black; 1st joint of the former sometimes reddish testaceous. Prothorax wider than the head with the eyes, a little wider than long, emarginate in front with rounded angles: sides narrowly reflexed moderately rounded, base broadly rounded, hind angles rounded, obtuse; dorsal line well marked, basal impressions broad faintly tuberculate. Elytra oblong-oval, wider than the prothorax, emarginate at base, striæ fine not punctured, interspaces wide, flat, dorsal punctures 3, the 1st on the 3rd, the other two on the 2nd stria. Beneath greenish black, legs nearly black, sometimes brown, thighs piceous. Length 6.5-8 mm.

Newfoundland; three specimens.

57. *P. maculicollis.* The black specimens which I have indicated as *var. a* of this species occur in Oregon, Arizona, and Western Kansas. They differ from the Californian typical form not only in color, but by having the side margin of the prothorax narrower and less reflexed near the base. It is quite possible that it should receive another name. But I am unwilling without larger material to place it as distinct.

79. *P. retractus.* A specimen from Lake Superior kindly sent me by Mr. H. G. Hubbard differs from the ordinary form by being entirely black. As I can find no other difference, I am disposed to regard it as a case of melanism, and not as indicating a distinct species.

80. *P. gemellus.* Elongate, black, with a piceous tinge, base of antennæ, palpi, epipleuræ and legs rufo-piceous. Prothorax ⅛ longer than wide, oval, emarginate in front, widely rounded on the sides, which are very finely margined; broadly rounded at base, front angles rounded, somewhat prominent, hind angles obsolete; disc less convex than in *P. picipennis*, transverse impressions feeble, dorsal line fine, basal impressions long and curved, but very faintly marked. Elytra elongate-oval, humeri strongly rounded, base deeply emarginate, apex rounded, not sinuate: striæ fine, well impressed, interspaces flat, dorsal punctures 4, the 1st and 2nd on 3rd stria, the others on the 2nd stria. Length 7 mm.

Vancouver Island, two specimens. Allied to *P. picipennis*, but sufficiently distinct by the characters given above.

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	mm.	
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* *This synonym is established upon a typical specimen from Kadjak; sent to me by Colonel Motschulsky.*

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66. crassicollis, Lec. Proc. Ac. Phil. 1860. p. 319.	7	H. B. T.
67. vicinus, G. & H. Catal. I. 377. ‖ *consimilis*, Lec. Syn. 57.	7	Can. L. Sup.
68. obsoletus, Say. Trans Am. Phil. II 57.—Lec. Syn. 57. *luctuosus*, Dej. Spec. III. 172. *placidus* ‡ Lec. Ann. Lyc IV. 227. *strigicollis*, Mann. Bull. Mosc. 1852. II. 294.—Lec. Syn. 57.	5.5-7	M. St. Can. Or. Br. Col.
? Bogemanni Dej. Spec. III. 171. Gyll. Ins. Suec. III. 697.		
69. quadripunctatus, Dej. Mem. Ins. IV. 102. Dej. Spec. III. 170.—Icon. t. 122 f. 5.—Lec. Agass. Lec. L. Sup. 206.—*octocolus*, Mann. Bull. Mosc. 1853. III. 144.—Chaud. Mots. Kæfer Russ. p. 69. *stigmosus*, Lec. Syn. 58.	5	Can. Alas. L. S.
70. bembidioides, Kirby, Faun. Am. Bor. IV. 15. t. I. f. 2.—Lec. Syn. 57.—*cicatricosus*, Mots. Bull. Mosc. 1864. III. 233.	6	L. Sup. W. T. T. H. B.
71. æruginosus, Dej. Spec. III. 168.—Lec. Syn. 51.	5.5-6	Atl. St.
72. limbatus, Say, Trans. Am. Phil. II. 49.—Lec. Syn. 51. *palliatus*, Dej. Spec. III. 174.	8.5	S. C. Ga. Fla. Tex.
73. crenistriatus, Lec. New Spec. I. 9.	7.5	W. St.
74. rubripes, Zimm. (Lec.) Trans. Am. Ent. Soc. II. 244.	7.5	M. St. Ks.

75. **punctiformis**, Say, Trans. Am. Phil. II. 58. —ibid. IV. 423.; Lec. Syn. 50.—*rufipes*, Dej. Spec. III. 173.—*foveicollis*, Chd. Bull. Mosc. 1843. IV. 764.	7.5-8	L. Sup. Ga. Tex. N. Y. Ks. Fla.
76. **sordens**, Kirby, Faun. Bor. Am. IV. 25.; *fuscescens*, Chd.	5.2	Can. L. Sup. Brit. Col.
77. **picicornis**, Lec. Proc. Ac. Phil. 1860. p. 319. ? *similis*, Kirby, Faun. Bor. Am. IV. 27. ? *fragilis*, Mann. Bull. Mosc. 1853. III. 142. Comparison of specimens is necessary to establish this supposed synonymy.	6	North West.
78. **ruficornis**, Lec. Agass. L. Sup. 205.—Lec. Syn. 53.—*picipennis*, var. C & D Kirby, Fauna Bor. Am. 25. *gratiosus*. Mann. Bull. Mosc. 1853. III. 142, Chaudoir apud Lec. Trans. Am. Ent. Soc. 1869. p. 248, states that Agonum *lenum* Dej. is Ag. *picipenne*, var. C Kirby, in which case the name will take the precedence of that proposed by me and 81 will retain the name given by Kirby.	7.5-8	Can. L. Sup. Alas.
79. **retractus**, *Lec.* Ann. IV. 228.	6.5	L. S. Mass. Pa.
80. **gemellus**, Lec. new species.	7.	Vanc.
81. **picipennis**, Kirby, Fauna Bor. Am. IV. 25. Lec. Syn. 23. Ag. *lenum*, Lec. Ann. Lyc. IV. 229. *elongatulus*, Hald. Proc. Ac. Phil. I. 300. *dilutipennis*, Mots. Bull. Mosc. 1864. IV. 322.	6-7	Mass. Ks. Pa.
82. **lutulentus**, Lec. Syn. 34.	5.5	L. Sup. H.B.T. Ills. N. Y.
83. **nigriceps**, Lec. Ann. Lyc. IV. 259.	5	L. Sup. Br. Col.

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1. *Schizogenius crenulatus* Lec. Ann. Lyc., V, 197,--3, 2 mm. Cal.
2. *planulatus*, Lec. New Spec, Col. I, 5.--5. 8 mm. N. Y.
3. *lineolatus*, *Say*. Trans. Am.Phil., II, 22.=*sulcifrons*, Putz. Mon. 652.--4.8. mm. Tex.
4. *Sallei*, Putz. Revis. Ann. Soc. Ent. Belg. X, 228.--5. 25 mm. Tex.
5. *ferrugineus*, Putz. Mon. 653.=*sulcatus*, Lec. Ann. Lyc. IV, 214.--3 mm. Tex.
6. *amphibius*, Hald, Proc. Ac. Phil. I, 299.=*frontalis*, Lec. Ann. Lyc. IV, 215.--3 mm. N. Y.
7. *depressus*, Lec. Ann. Lyc. V, 197.--3.1 mm. Cal.
8. *pluripunctatus*, Lec. Ann. Lyc. IV, 197.--3. 2 mm. Cal.

PACHYTELES, *Perty*.

P. testaceus. Horn, *Trans. Am. Ent. Soc. II. 129.* A small testaceous insect resembling somewhat in form *Nomius pygmaeus*, but less convex and with fine short hairs arising from indistinct punctures. Occurs under stones in Camp Grant. Ariz. rare. Length 4—5. mm.

G. H. Horn.

BRACHINUS, *Web.*

Dr. Leconte in his Notes on the Species of Brachinus (Proc. Ac. Phil. 1862. p. 523) says; "I consider the Species of this genus very decidedly opiniative" and Baron Chaudoir in his Observations syn. sur les Carab. de l'Am. (Extrait de la Revue & Mag. de Zool. 1868. p. 33.) also says: Several Entomologists having described American Species (of Brachinus) without being able to compare the types have thereby caused such a confusion that it is very difficult to find a way through.

We have therefore concluded to delay the publication of a synoptic table of Brachinus until a new study of the Species can be made.

F. G. Schaupp.

Synoptic Tables by Dr. J. L. Leconte.

PANACAEUS, *Latr.*

Coarsely punctured insects clothed with erect hairs; black with the elytra more or less red. Head strongly constricted at base, with rectangular hind angles.

Head and prothorax black 2
Head and prothorax brownish red 3
2. Elytra red with a transverse black band just behind the middle, interrupted at the suture .... **1 Sallei.**
Elytra black each with two large red spots extending from the margin to the 1st, or 2nd stria .... **2. crucigerus.**
3. Elytra red with a transverse black band behind the middle and another near the tip: .... **3. fasciatus.**

1. *Sallei* Chaud, Bull, Mosc, 1861, IV, 353--12 mm. Ariz. Mex. Tex,
2. *crucigerus*, *Say*. Trans. Am. Phil. II, 1825 p. 69--11 mm. N. Y. La.
3. *faciatus*, *Say*. ibidem p. 70--Dej. Spec. II ,289-- 8. 2 mm. N. Y. Ga. Ks.

MICRIXYS, *Lec.*

Similar to Panagaeus, but head not constricted behind, prothorax pedunculate at base, hind angles small but prominent.

Upper surface red, elytra with a transverse black band just behind the middle, interrupted at the suture, and an apical black spot **1. distinctus.**

1. *distinctus*, *Hald.* Stansb. Explor. 1852 p. 373---Lec. Col. of Ks. 1859. p. 1. t. 2 f. 2. ---7. 5 mm. Tex. N. Mex.

MORIO, *Latr.*

Elongate black species, resembling a Pterostichus in appearance, but easily known by the short moniliate smooth and shining antennæ, the ligula without paraglossae; the front tibiae triangular, not spinose at the outer apical angle and the side pieces of the mesothorax not divided by the suture.

Elongate, black shining, prothorax scarcely wider than long, narrower behind, hind angles rectangular, basal impressions deep, elytral striæ deep, feebly punctured; scutellar stria wanting, one dorsal puncture on 2nd stria behind the middle.. **1. georgiae.**

1. *georgiae*, Beauv. Ins. Afr. et Am. 1805. p. 107, t. 15, f. 5,=*monilicornis*, Latr. Gen. Crust. I. 206. ---12.3--- 18 mm. S. C. Fla. La. L. Cal.

HELLUOMORPHA, *Lap.*

Elongate, hairy, punctured insects, with broadly compressed antennæ. Prothorax subcordate, narrower behind, with truncate base, and rectangular hind angles, Head moderatly constricted behind, neck rather stout. Elytra shorter than the abdomen, more or less costate, broadly rounded at tip.

The species are red-brown in color, with the elytra and abdomen sometimes darker, and are very much alike in appearance.

Outer joints of antennæ smoother along the middle of the compressed faces 2
Outer joints of antennæ densely, uniformly punctured.
Elytra black, costæ narrow, interspaces confusedly punctured. **1 nigripennis.**
2. Joints of antennæ 5--10 square or transverse 3
Joints of antennæ 5--10 oblong; ferruginous, interspaces of elytra with three irregular series of punctures.................................. **6 ferruginea.**
3. Prothorax as wide as long; elytra less strongly costate 5
Prothorax longer than wide; elytra more strongly costate 4
4. Ferruginous brown; prothorax coarsely and sparsely punctured; elytral interspaces with two series of punctures .... **2. Clairvillei.**

Abdomen darker; prothorax less punctured each side of the middle; elytral interspaces with three confused rows of punctures................**3. praeusta.**

5. Elytra and abdomen usually darker; elytral interspaces with three confused rows of punctures.................................... **4. bicolor.**

Ferruginous; elytral interspaces with two rows of punctures............ **5. texana.**

1. *nigripennis*, Dej. Spec. V, 408.--10-12 mm. Ga.
2. *Clairvillei*, Dej. Spec. V, 406.—19 mm. Ga.
3. *praeusta*, Dej. Spec. I, 289.—14 mm. Ga.
4. *bicolor*, Harris, N. Engl. Farmer VII, 117. 1820. Ed. Scudder.—Harris Corr. 343. = *laticornis* Dej. Spec. V, 407.=*pubescens*, Klug. Jahrb. I, 77.—12–16. 5 mm. Mass. Fla. Ks. N. Y.
5. *texana*, Lec. Class. Car. p. 374.--17 mm. Tex.
6. *ferruginea*, Lec. ibidem p. 373.—13. 5–15 mm. Tex.

CALERITA, *Fab.*

Graceful, opake, pubescent insects, with head and elytra black, or blue-black, and prothorax cordiform, ferruginous. Antennæ long, setaceous, 1st. joint elongate: head strongly constricted behind, neck slender. Elytra oval, broadly obliquely truncate behind, finely striate in our species, costate in many foreign ones.

Legs, palpi and base of antennæ ferruginous.............................. **2.**

Legs, palpi and antennæ black.......... ....**1. atripes.**

2. Pubescence of elytra erect near the scutellum .... **3.**

Pubescence of elytra uniform, obliquely decumbent: head behind the eyes strongly rounded... **2. Janus.**

3. Eyes larges and more prominent, sides of head obliquely rounded behind **3. Lecontei.**

Eyes smaller and less prominent: sides of head longer behind, oblique and less rounded... **4. bicolor.**

1. *atripes*, Lec. Proc. Ac. Phil. 1858. p. 59.—17–19 mm. Ks. Tex.
2. *Janus*, Fab. Syst. El. I, 136.=*americana*, Fab. Syst. Ent. p. 242.=*cordicollis*, Chaud. Bull. Mosc. 1843. IV, 699.=*cyanipennis*, Dej. Spec. V, 293.—17–22 mm. N. Y. Ks. Fla.
3. *Lecontei*, Dej. Spec. V. 294.=*californica*, Mann. Bull. Mosc. 1843. II, 183.—13. 5–18. 5 mm. S. C. Tex. Cal.
4. *bicolor*, Drury, Ins. I, 94. t. 42, f. 4.=*americana*, Dej. Spec. I, 187.=*borealis*, Casteln. Hist. nat. I, 35.=*dubia*, Lec. Proc. Ac. Phil. II, 48.=*longicollis*, Chaud. Bull. Mosc. 1843. IV, 700.—19–21 mm. N. Y. Ga.

ZUPHIUM, *Latr.*

Small, depressed, brown pubescent species, with triangular head, squarely truncate behind. forming a very small neck, prothorax narrowed behind; elytra feebly striate, broadly truncate at tip: antennæ slender, 1st. joint very long.

Antennæ longer, setaceous: ferruginous brown, head darker, more feebly punctured at the middle prothorax longer than wide........................**1. longicolle. n. sp.**

Antennæ filiform, outer joints less elongate; prothorax not longer than wide, more suddenly narrowed behind with more divergent angles: elytra fuscous, base paler . . . **2.**

2. Prothorax more convex and less finely punctured................ **2. americanum.**

Prothorax less convex and more finely punctured................ **3. mexicanum.**

1. *longicoll.* , *Lec.* (new species) 5. 5 mm. Tex. Cal.
2. *americanum*, Dej. Spec. V, 298 –5 mm. Lo.
3. *mexicanum*, Chaud. Bull. Mosc. 1862. IV, 314.—4. 5 mm. Ariz. Mex.

Zuphium longicolle, n. sp. Depressed, dull ferruginous, finely pubescent, head somwhat dusky, nearly smooth, prolonged behind the eyes, hind angles strongly rounded, base truncate at the middle; prothorax a little longer than wide, broadest near the apex, which is oblique each side and truncate at tip, fitting to the small neck: front angles rounded, sides oblique, slightly rounded, sinuate near the base which is about half as wide as the widest part, hind angles rectangular prominent: disc distinctly, not densely punctured, dorsal line well impressed, basal impressions long. Elytra oblong-elongate, humeri broadly rounded: apex truncate, outer angles rounded; striae very feeble, interspaces densely and finely punctured. Antennæ setaceous, two-thirds as long as the body: 1st. joint nearly as long as the head: 2nd. joint half as long as the 3rd., which is slightly longer than the 4th: 4—11 equal, about three times longer than their width. Abdomen and legs yellowish. Length 5. 5 mm. *J. L. Leconte.*

San Joaquin Co., Cal.: Mr. Bluethner; Texas, Belfrage. Differs from the other two species by longer and thinner antennæ and more elongate prothorax.

DIAPHORUS, *Dej.*

Antennae slender, joints cylindrical, 2–3 shorter than the following ones; prothorax truncate at base, angles basal.. **2.**

Antennae stouter, joints oval, 2–10 equal in length: prothorax pedunculate at base, angles near but not at the base, THALPIUS, *Lec.* .... **3.**

2. Fusco-piceous, elytra deeply striate, interspaces narrow: antennae, palpi and legs ferruginous, joints 5—11 of former pale testaceous................ **1. Lecontei.**

Ferruginous elytra finely striate, interspaces wide, antennae, palpi and legs yellowish.. **2. tenuicollis.**

3. Joints of antennae 4—10 oblong .... **4.**

Joints of antennae 4—10 square with rounded angles: piceous or fuscous: antennae, palpi and legs yellow.............................. **3. pygmaeus.**

4. Prothorax narrower and more convex: ferruginous, elytra with a dark sutural cloud behind the middle... **5.**

Prothorax wider and less convex; uniform ferruginous..................**6. rufulus.**

5. Elytral interspaces flat, confused punctured........ .... **4. Hornii.**

Elytral interspaces convex, sparsely punctured........................ **5. dorsalis.**

HINTS ON THE REARING OF LEPIDOPTERA.*

BY GEO. D. HULST.

Very few specimens captured in the open air are taken from the net or bottle in a perfect condition. A very large number have the wings broken or rubbed, and a very much larger number, even if otherwise perfect, have lost their virgin luster of color. Consequently very many collectors have been induced to enrich their cabinets with specimens reared from the Caterpillar; for although this is in one sense much more tiresome, and possibly less exciting, yet the rearing of larvae has a special interest to anyone who loves nature; and the one who delights only in the beauty of the final form is amply rewarded with the possession of perfect specimens. And if the collector be a student. he finds in reared specimens his only trustworthy objects of study.

Some collectors assert that artificially bred specimens never attain the full size and luster of specimens bred by nature. But they without any doubt are in error. It is true that the greater number of bred specimens lack in size and luster. But that is accounted for by the fact that nature never fails to furnish fresh food and plenty of it to her wards, while it is very rarely that a brood of insects is raised by man without being more than once stinted in food or having it in a wilted condition. It is certain that with proper care not only can nature be equalled, but in very many cases surpassed. For nature presents many things unfavorable to the full development of insect life. Art may give only what is best; this requires care and experience beyond what the most have time or opportunity to give.

1. It is preferable under all circumstances to rear all imagines from the egg. The student will be satisfied with nothing less; for a partial knowledge of the life history never satisfies. And as has already been suggested every part of the life history is no less beautiful and interesting than its final consummation.

The eggs of the Lepidoptera can in the majority of cases be easily obtained, especially where the food-plant is known. The females of the Diurnals become fertilized very soon after emerging from the Chrysalis, and any female specimen taken in the net with wings at all broken or rubbed by flight, one can almost surely take for granted has mated. Mr. Wm. H. Edwards of Coalburgh, W. Va., whose experience in this line has been large and successful, advises a simple method of securing eggs. It is to cover a branch or set of the food-plant with a fine netting bag, putting the female free within, and giving in the Inclosure, enough room for her to move about freely. It is important to give plenty of light, but not have if possible, the insect exposed to the rays of the sun. The Sphingidae and Bombycidae, as a rule, are easily mated. A virgin female is taken ; a thread is tied securely about the wings; the loose end of the thread is then tied to a branch of a tree or shrub, care being taken that it is tied so that if the insect fall it will be able to reach leaves or stalk with its feet. A good male is thus very often secured as a compensation for the female ruined, for even though the wings are secured by a thread run behind the costa and tied, the insect will lose its beauty before done laying its eggs.

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* In preparing this article. I have made very free use of Mss on the subject written by Mr. A Thalenhorst, of Hamburg Germany.

The greater portion of these families will lay their eggs under any conditions, but they ought to be placed so they can lay them on the food-plant of the larva.

The Noctuidae can be made to give us eggs by following the rule laid down for the Diurnals. Specimens taken at sugar can without stupifying be set apart for this purpose.

The eggs should be kept in a not too dry or overheated atmosphere, and should be so placed, that at its birth, without effort, the larva finds at once fresh food.

2. Having the larvae from the egg, or having obtained them otherwise, our aim must be to give nature without nature's lack.

Of course we cannot allow the larvae liberty :– Breeding cages and means of restraint are the first necessity.

Under restraint we should see to it that our wards have light, air, cleanliness, fresh food, and the minor conditions which the tendency of the individual insect demands.

Air and light are absolutely necessary though not by any means to the fullest degree. Some larvae need little or no light, as naturally they feed by night and are concealed by day ; and many seem to do very well with very imperfect ventilation. It is pretty certain that, accustomed from birth to a lack in these respects, any larvae will thrive well with little light, and with very slowly changed air, if the change be continuous. But if the food-plant be near at hand, greater success will be attained by having light and ventilation free.

The best method of rearing is probably, to put the larvae upon a limb of a tree with a large space covered with very fine netting. This is especially good for the spinners, though some have a tendency to eat their way through the netting, especially before pupation.

A wide mouthed glass jar makes an excellent breeding cage. It should be not less than a quart in capacity, and should have the mouth covered closely with fine wire or netting. The bottom should be covered with paper, and from the edge of the paper there should be a number of little sticks by which fallen larvae can easily ascend to the food.

Ordinary breeding boxes are made (if small) with glass front, with netting on either end, and with a door behind, through which the food-plant can be changed, and the box itself easily cleansed. If large, a small space at each end covered with gauze will suffice for ventilation, and the top can be arranged with a moveable frame closely fitting and covered with close netting or gauze.

It is preferable we think in large boxes to have them without bottom. They can be placed upon the ground and moved as cleanliness demands.

Great care must be taken as the time of pupation approaches to secure such larvae as transform beneath the ground.

Cleanliness is under all circumstances absolutely indispensable.

Where the ventilation is poor the droppings of the larvae and the wilted parts of leaves should never be allowed to remain a day.

All sick or dead larvae should be removed at once and at a distance from all others. We think it would be better at once to destroy them.

If any contagious disease has made its appearance, all larvae attacked should be at once destroyed, and the box should be thoroughly cleansed with dilute carbolic acid water.

The food is of the first importance, and great care should be taken to have it continually fresh and sweet. It should be put in a bottle containing fresh water, which should be changed every few hours ; the bottle should, so far as not filled with the stems of the food-plant, be closely corked. Care should be taken not to have too much food in a small jar or box, as it fouls the air and hastens its own decay.

It is important to have planted near at hand some of the more common food-plants, as e. g. Willow, Wild cherry, Oak, Sweet gum, Maple, with Violets, Asters, Grasses, &c.

A score of varieties of food-plants will take very little room, and if cut back will furnish a large amount of food ; and with these the great majority of the Lepidoptera can be raised, as a large number have more than one food-plant.

After once beginning with giving larvae a certain food-plant, it is very dangerous to change it for another, though this may be very closely allied in nature.

All captured caterpillars should be provided with the same food on which they were found. If however this be impossible, they may be given the choice of two or three nearly related food-plants, and fed thereafter on the one they choose, if any special choice is made.

Care must be taken to give larvae the minor conditions which their individual tendencies demand.

Larvae which hybernate are generally very apt to die when hybernated artificially. But is very probable that the mortality among these is very great as well as in nature.

If kept too dry, they die from lack of moisture. If kept moist, they are apt to die from fungus.

The effort should be to keep them at a temperature as steady as possible, and below the freezing point.

They should be kept moist, but not wet. The air ordinarily contains sufficient moisture for the purpose. And they should be kept under circumstances so the air about them is very slowly but continuously changed. Of course their surroundings must at all times be cleanly.

The breeding cages of the Diurnals and Spinners should be provided with convenient rests to which they may fix their Chrysales and cocoons. And in many cases for this purpose, a moist clean litter must cover the bottom of the box.

Many larvae require earth during all their larval condition ; and very many more require it for pupation. The noctuae especially burrow in the earth during the day, and the catocalidae as well as many others, must have clean litter in which to hide, for they feed only at night, and lie concealed under bark, in crevices, and among grass-roots and leaves during the day.

For pupation, the earth ought to be if possible a foot in depth, though a much less depth will answer every purpose.

It should be sifted and roasted to destroy all animal life, and then moistened.

Light sandy loam will do very well, but probably the rich light soil of the woods is as good as can be found. It should be made slightly compact, but not pressed hard.

Such species as pupate in soft partially decayed wood must be provided with it. And so in general the conditions which nature demands must be given as they are needed.

Care should be taken against all insects which are parasitic upon the larvae.

Ichneumons and flies probably destroy more Caterpillars than the birds. They prey upon them from the time the egg is laid.

Very many are exceedingly minute, and the netting which serves for ventilation in our breeding boxes must have its meshes very small.

When a Caterpillar is observed to be infested with parasites, it should be at once utterly destroyed.

Very great care should be taken in the case of those so destructive, which spin their little white cocoons outside upon the back generally of the larvae of the Sphingidae. They must not be dropped or lost. but each and every one must be carefully and ruthlessly destroyed by fire. And very much greater care should be taken against those, no less minute and destructive, which infest especially the chrysales of the Papilionidae.

One of their number bores a hole through the shell of the chrysalis, and forthwith, as from the Grecian horse within the walls of Troy, the horrid progeny come to destroy. It is preferable on this account to keep the chrysales of Diurnals separate from the Caterpillars.

The worst ill to guard against however is one of which we have already spoken,–contagious diseases These appear sometimes without seeming cause, but are always extensively and rapidly fatal. Prevention is accomplished only by the most scrupulous cleanliness, by fresh, not wet food, and proper conditions of ventilation.

If disease appears, the sick should be destroyed, and buried if not burned; and the well should be immediately removed to a fresh clean breeding cage at a distance.

We are given to understand by Mr. Akhurst, who is a veteran in this business, that if the air be slightly impregnated with the odor of carbolic acid or creosote, the larvae are less given to diseases, especially those of a fungoid nature.

Experience and care in rearing, may give us most excellent results in the size and beauty of specimens. Where the larvae will endure close confinement, rearing in a close, though pretty large glass jar, where there is a slight excess of moisture in the air, and with a temperature kept at from 90 to 95 deg. Fahr., will give specimens of surprising size and beauty.

We are not ourselves believers in the "blue glass theory" not long since so widely received; but we are told on good authority that blue or purple glass excites larvae to greater voracity, and so causes a greater development; and that green glass has the contrary effect.

We did not hear of this till lately, and have not had opportunity to verify or disprove it.

Of course in the cleaning of the boxes and the removal of litter and wilted food-plant, great care must be taken to see that no larvae are thus inadvertently thrown away. This is especially important when the larvae are very small.

When glass jars are used, there must not be an excess of moisture in the jar, as the small larvae are very often drowned in the drops which collect on the sides.

3. It would without doubt be better if the pupae were allowed to remain undisturbed in the places where they have cast off the larval skin, (and especially is this the case with such as go into the ground to pupate), until they emerge after their final transformation. But to allow them so to remain, in the most of cases presents difficulties which often result in loss. For with the most of us the number of cages is limited, and it will not do to have a single cage used as the receptacle of very many larvae for pupation. For when some either above or below the ground have just cast off the larval skin, and are exceedingly tender (since as yet the pupal skin has not hardened), others may be roaming about the cage, or burrowing into the earth, and these

have no sympathy or mercy for their brethren a little more advanced in life than they.

And again, very many larvae, notwithstanding our care, go into the pupal state in a weakened condition, and are not able to throw off the larval skin properly, or have not strength to emerge as imagines; and these dying, foul the earth, and sow the seeds of disease.

And still again, it is next to impossible to keep the earth in which pupae are, in a proper condition of moisture. It is often too dry, and oftener too wet during the long months of Autumn and Spring; and both these excesses cause large mortality,–the one by drying too much the casing and tissues of the pupa,–the other by causing fungoid diseases and putridity.

We think it better on the average, especially in the case of hybernating pupae, to make special efforts for their safety which involve a change of location, and consequently the necessity of handling them.

The pupal cage should have quite a height above the earth or moss at the bottom. Its sides and cover, should be lined with cloth or gauze, thus affording an easy foothold to the newly emerged insect. It should have good ventilation, and be well lighted; and should be protected against mice, rats, ants, roaches, and all vermin.

In the summer time it should be in the open air, not exposed to the rays of the sun, and should be protected from rain. In the winter it can be kept in an open garret, or any dry open room which has no fire in it. Pupae should never be kept in a room with a fire in it, as if not dried up, the imago when it appears will generally not expand its wings properly.

If pupae are changed from the place in which they become pupae, they should never be put again in loose earth. Naturally, they form a cocoon of the earth about them, and lie free within this.

The loose earth coming in contact with them is very apt to injure by cutting the skin between the segments, and invites mould and decay. This is of course where the pupae are entirely covered with the earth. An excellent way however is to have the earth with a ridge elevated about one half to three-fourths of an inch about the edge of the box, above the level of the space within; this space within is to be made smooth and somewhat hard, the whole is to be kept well moistened. The pupae are to be laid loosely upon this lower surface. These are to be covered with a board or tin, resting closely upon the elevated ridge.

This will keep the pupae well moistened. A hole or two, must be left in the ridge, and plenty of space given for the free exit of the imago.

The method, which, with many of our friends, has proved most successful, is as follows,- one provides himself with a large quantity of the ordinary swamp-moss used by florists. It is heated and dried, so as to destroy all aquatic life, then moistened, and is packed without any earth in the bottom of the cage or box, to the depth of several inches. The papae are carefully laid upon this surface, and over them is spread some two or three inches more of moistened moss. This is not at all or very lightly packed.

The pupae cannot possibly injure themselves, and the moss retains so much moisture that it is hardly possible for them to become too dry, and absorbs so much that they can easily be kept from being water-soaked. The moss as well offers little resistance to the escape of the imago.

Pupae which are in cocoons, and which in nature are on the surface amongst grass-stubble or under leaves, should never be removed from their cocoons, and should be kept moist as in nature.

They are kept in nice condition by being laid upon the surface of the moss bed.

In the removal of the pupae from the earth in which they have pupated, very great care should be taken. The soil should be very thoroughly examined, and the pupae should be handled as gently and as little as possible.

They should not under any circumstances be allowed to dry in transitu, and after the transfer is made should be allowed to rest in peace.

The moss should not be removed, or even disturbed till as late as August following the hybernation.

4. When the Butterfly or moth has emerged, one should have patience. It should not be killed as soon as its wings are fully expanded, but time should be given to let the juices be absorbed.

If pinned too soon, a drop of liquid exudes where the pin enters the thorax, and very often where the needle-point enters the wings in moving them to their proper position; and the result is there is a blotch on the thorax, and the wings stick to the overlying paper or glass, by which they are pressed ; and when these are removed the wings are torn or disfigured. If however the liquid does exude, it can be largely, if not entirely absorbed, by touching it with the edge of a piece of blotting paper.

The pin should be thrust through the middle of the thorax. Many specimens are spoiled by having a twisted or lop-sided appearance, on account of carelessness in this.

Each wing should be exactly even with the opposite one, and not too far forward. The antennae should be in full view, level with the body, and at equal angles with the line of the body.

The insect must be, or ought to be left in peace on the drying-board for at least two weeks. We are always too much in a hurry to feast our eyes on the beauty of our specimens.

We should keep our best specimens for ourselves. And should have our cabinet not for show, but for study, and we should see to it that it is studied

To many, especially beginners, scientific terms seem useless and pedantic ; in very many cases they are both of these. Where a plain English word means exactly the same thing, as a Greek or Latin derived polysyllabic, the plain English word should always be used, whether it is a so-called scientific word or not.

But knowledge ought to be exact, and to that end we must accustom ouselves to many technical words and names. These are no more dreadful than other words when we get accustomed to them. And we should get used to applying these to what they designate, so when we wish to speak of any special part of an insect, we may not have to go into a long inexact description, but by the technical term can locate what we mean at once.

And in connection with this, we should by comparrison of our specimens with published descriptions of genera, get the generic distinctions and the names of the parts in which they exist clearly in our minds.

So we may know the genus of our insect at sight if it is perfect, and be able to ourselves and so to others, to tell why we put one insect under one generic name, and another under another.

Knowledge is of very little account, if it is not so definite in our minds that we can put it into exact language.

In the rearing of Lepidoptera, we should not be discouraged by by losses. With the utmost attention and care, we will often lose a large percentage of the number with which we began.

We would urge the importance of seeking for and rearing rare species, rather than those which are common.

By accident or careful search, we can each season find some things that are scarce ; and once in our possession, these take no more care and give us no more trouble than those which have no value. And having what is rare, we should strive to keep the stock.

It often pays very largely in Entomology " to throw a sprat to catch a salmon," or in other words, to lose a rare female to get a whole laying of eggs.

In cabinet specimens it is important to have at least one inverted specimen of each specie. And with the imagines there should be a blown specimen of the full sized larva. For preparing these, directions are given on pages 93 and 94. vol. 1, of the Bulletin.

And in the whole of our work care, observation and patience will soon make us artists.

We often think it is so easy for some people to make flowers live and bloom, and so easy for them to arrange the flowers into tasty and elegant bouquets. We sometimes think the same, as we watch some of our friends in their work. Their larvae thrive so well, their cabinet specimens are so perfect ! And ours, with more care, meet with many more losses, and in the end do not compare with theirs.

The truth is, they have by care and judgment, simply become artists in this line. And the art, born to none, can be be attained by anyone.

Finally, in the rearing of all Lepidoptera, we should not fear to take copious notes. We are not apt to forget easily what we observe and record carefully. And if no history of any larvae reared by us has been yet published, we should see to it that we give a clear explicit and modest summary of the history from egg to imago, to some Entomological journal for publication.

And we should remember for our encouragement, that in the giving to science of a complete history, we are doing that which more than anything else science now needs. And further whatever our attainments in the present, our observation will compel scientific accuracy and accomplishment in the future. What we gain may not be technical, but it will be genuine and real. Without this, technicalities are valueless—this lies at the basis of all that is valuable in science.

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Flight of Lepidoptera in Mid-Ocean.

Reports of the flight of immense numbers of Butterflies have at times appeared in various Entomological papers,—and among these notably Vanessa Cardui, Terias lisa and among our own, Danais plexippus.

A much more interesting fact of the flight of Lepidoptera was related to me by my friend Carl Thalenhorst, first officer of the German steamship "Graf Bismark."

On Thursday, Dec. 4th, on our route from Bahia to Rio Janeiro when we were about 30 miles from the Abrolhos (large rocks in the Atlantic Ocean, 30 miles from the mainland,) and consequently 60 miles from the Brazilian coast, hundreds of Butterflies and moths suddenly appeared and lit on our decks. There was a light but continuous rain during the day on which they came to us.

Such appearances of insects indicate to the seamen the approach of the Pampero, a south-west wind often very violent.

The course of the vessel was directed northward, but multitudes of Lepidoptera continued to appear until night.

A few specimens—all of them of the Heterocera were brought to me by Mr. Thalenhorst, and present a wonderful variety of species; there were 20 specimens representing 15 species; of these 7 were Sphingidae, 8 Noctuidae; of the former were Amphonyx Antaeus, Erynnis Ello, E. Scyron, Philampelus vitis and Choerocampa tersa. Of the latter were Erebus odora and E. Zenobia. The rest my Lepidopterological friends have not been able to indentify.

Mr. Thalenhorst also informs me, off the coast of Buenos Ayres the ships are often visited by immense numbers of Libellulae, which are so tired that they may easily be taken with the fingers.

Their arrival is always an indication of the approach of the Pampero.

F. G. Schaupp.

The Butterfly and the Humming Bird.

Some ten years ago, while staying with my friend W. H. Edwards in Coalburgh, W. Va., and enjoying his hospitality in that charming region, I was standing outside the garden-gate, wondering at the strange behaviour of a Danais Archippus female, which walked quietly around on a full blown flower of Milkweed, upon which it had been feeding, then descending, it walked over some leaves, now nestled for a moment right under the flower, then flew off, returning again, and repeating the same movement for some time ; as night drew on, it nestled beneath the flower as if intent on there remaining, to be on hand for its sweets on the morrow.

Curious to know whether it would really prefer that resting-place to its accustomed dry twigs on trees, I drew nearer and was startled at the sudden apperance of a Humming bird on the same flower. Scarcely had I observed it, than out rushed the butterfly and furiously attacked the bird, which in an instant sought safety in precipitate flight, followed closely by the insect till lost to view in the distance. Amazed at so strange a spectacle, I stood upon the spot, gazing in the direction where they had disappeared for some five minutes or more, when to my surprise and pleasure I saw the Butterfly coming back, which, when near the flower flew in a wide circuit around it, as if to ascertain whether another enemy had taken possession of it or not. Then lessening its flight it finally ventured upon the flower again ; but being much agitated walked nearly all over the plant repeatedly until it finally settled upon its chosen place for its nightly rest.

It now rests in my cabinet.

Julius L. Meyer.

* * *

Collecting Cerambycidae.

If the piles of hard wood, which have been cut during the winter, be examined through the spring, many species of Cerambycidae will be found, either sunning themselves on the outside of the sticks, or concealed beneath them, which would probably have been seldom met with otherwise.

Other wood borers, Buprestidae, Rhyncophora, etc., are occasionaly captured in these situations.

Chas. A. Crampton.

BULLETIN

—OF THE—

Brooklyn Entomological Society.

Vol. II. BROOKLYN, FEB. & MAR. 1880. No. 10 & 11.

Food-plants of Lepidopterous Larvae.

This last season one of our members found **Darapsa Choerilus,** eggs and larvæ, on the following Food-plants Grape, Virginia creeper, (Ampelopsis quinquifolia), Sheepberry (Virburnum lentago), Pepperidge or Sourgum (Nyssa multiflora). A decided preference seemed to exist in favor of the Sheepsberry as a food-plant.

GEO. D. HULST.

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Eacles imperialis is one of the least particular of all our Moths in its choice of food-plants, It has been found by various collectors in Brooklyn, commonly on the Pines, Spruces and Maples, less commonly on Sweetgum, Hickory, Walnut, Birch. Chestnut, Linden, Alder, Swamp button bush, Willow, Elm, Plane, Horse-Chestnut, Tamarack, and even on Corn. It is difficult to rear from Egg in confinement, but is very hardy in open air, and is very little troubled with parasites.

GEO. D. HULST.

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In a note on page 91 Vol. 1 of the Bulletin. Mr Hulst mentions the fact the larvæ of Samia Cynthia had been found feeding upon the Tulip tree and the Sassafras.

During the summer of 1879 the larvæ has been found feeding as well on the sheepberry, the wild cherry, the bitter sweet, and the willow, and this voluntarily in freedom.

The moth is without doubt fully acclimated amongst us, and would easily survive without the ailanthus, its one food-plant in Japan

The influence of new conditions is plainly and remarkably evident in the great change in the shape of the wings, and of the transparent lunules upon the wings. The insect seems though the shape of the Promethea moth, to be rapidly advancing towards the likeness of the Cecropia.

I am not able to state it as an absolute fact, but casual observation has led me to believe that the larva of the Cynthea does not run the meshes of its silk so far from the main cocoon as formerly. As a consequence, the cocoons on the Ailanthus tree are not so generally fastened to the woody branch, and are more liable to fall and be destroyed.

P. ELBERT NOSTRAND.

Notes on Nemoria Chloroleucaria, *Guen.*

In July last we found a slender Geometrid larva feeding upon the petals of the clustered flowers of the common oxeye daisy, Leucanthemum vulgare. It had already passed its last moult and pupated not long after we found it. At its full development it was 25 mm. in length by less than 2 mm. in diameter. The head was of a russety color and had two ear like projections at the summit. There were also two similar smaller appendages on the second segment of the body which were also of a russety color. The body itself was dull green with a yellowish tendency towards the back which was marked with a line of purple. The legs were ten in number. Before pupatation the larva made a slight cocoon drawing together leaves with threads of silk. The pupatation took place July 24. The head was slightly russety, the body whitish green with black dorsal line. Before becoming an imago the eyes showed black and the body became pale dull white. The length of the pupa was 8 mm. The imago a male appeared August 4. The time of the pupal stage is therefore only 10 days.

We have found the imago early in spring so the insect is undoubtedly two brooded in this latitude.

There is a brief statement concerning the larva of this insect in Packards Geometrid Moth page 371. Comparing these with our own observations we conclude there must be considerable variation in food-plant and [illegible] of the larva. Mr. Goodell states his example made no cocoon but simply fastened itself to the bottom of the box. It is likely that with loose leaves this fastening would have been the slight cocoon of our experience.

GEO. D. HULST.

Insect Life on Coney Island.

BY F. G. SCHAUPP.

The fauna of Coney Island, with its white frogs, white grasshoppers, white spiders and white coleoptera, is very interesting. Besides the several species, peculiar to the Island, e. g. *Cicindela lepida*, *Pasimachus sublaevis*, var. *substriatus*, *Dyschirius sellatus*, D. *filiformis*, *Schizogenius planulatus*, etc. there are found very many rare species cast on the shore by southern winds, often in immense numbers.

Thus I filled one day two bottles with *Hoplia modesta*, elsewhere by no means common, and had to leave hundreds more on the shore. My friend J. Sticht, collected in one day over a hundred Cerambycidae. I myself once found on a handful of straw that was washed upon the shore over fifty different species.

In this way the *Doryphora 10-lineata*, came from other regions to Long Island and for several summers the entire coast has been paved with this pest.

Every new wave brings new guests. Some are thrown lifeless upon the shore, some float on seaweed, bunches of straw, clippings of wood, braving the foaming breakers, and as soon as they reach the shore, creep land wards, happy like emigrants from the old world after a long stormy journey.

But alas! after a few steps, having scarsely finished their prayer of thankfullness for their deliverance from menacing death in the waters, a member of the BROOKLYN ENTOMOLOGICAL SOCIETY approaches with his deadly vial, and alcohol or Cyanide is their fate.

You can hardly walk three feet along the shore without disturbing some Cicindela dorsalis and hirticollis of which there are thousands and thousands. Somewhat remote from the shore, but not so common is found the Cic. lepida and under cow or horse droppings, *Pasimachus sublaevis*, *Geopinus incrassatus*, *Hister bimaculatus* etc.

But the most interesting part to the Coleopterists are those small ponds 500 or 1,000 feet distant from the shore rising and falling with the flood and ebb tides.

Along these ponds whose borders are somewhat elevated there are always to be seen fresh holes, made by Dyschirius and Clivina.. These are there at all times, at ebb and flood tides, and are very easily distinguished by the newly thrown up loose sand. As the water becomes low the sun and the winds soon dry up or close the holes, situated at the higher water mark, and the hydrophiline settlers leave their mountain houses and descend to the retreating water to find food and new humid homes at its edge, but how short is their stay.

The flood tide soon comes! a gentle shallow wave washes the shore, and gives the little settlers a warning to leave their scarcely finished homes; then it goes back to give them time to escape. Lazy after dinner, and tired by their digging, they slowly leave their new found holes.

The same gentle wave comes again, a trifle rougher, and admonishes them to hurry up! The little legs move faster and gain the hill, to find that the wind has destroyed their former holes, and that they must dig new ones. By doing this for generations, their front feet have become more and more developed and adapted to the work. What an immense amount of work to be performed in one day, climbing up and down the mountains and building four different homes! *

No doubt these little insects are the very aborigines of Coney Island, and like the aboriginal races of this continent must yield to the march of civilization, to the cruel merciless pale faces. Where but a few years ago, was still the dominion of the wooing Cicindelidæ, invaded only by some stray (bug) hunter, now the ground is trampled by thousands and thousands, in long files and broad ranks, and the noble Cicindelidæ present but a remnant of their former greatness (numerically.)

The inside ponds whose shores are peopled by Scaritini are now separated from the embrace of the sea, by railroad dams, dikes, bulkwarks, and immense buildings, there is no more rising and falling of the tides, no flood to bring new food. The former channels are becoming swamps, and are filling up with sand and will gradually dry up.

Now the necessity or opportunity for these little Scaritini to dig four holes each day has ceased to exist. But their front feet are thickened and greatly developed by their hard work in the daily struggles of life. Perhaps in a few hundred years, some thinking Entomologist may find these very same Scaritini, under stones etc. near the shores of stabile ponds or swamps, and in theorizing upon the great development of their tarsi, which will then

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* The fact that these insects inhabit sloping banks and ascend and descend them with the rising and falling water, was discovered by me several years ago while collecting at the banks of the Delaware and the North Branch pouring water over their holes.
See Bulletin Vol. 1 Page 2.

be of no use, guess the cause of their development, and the former condition of these little insects.

Already the faunistie character of the Island is changed to some extent. Common Carabidæ, which with the exception of *Anisodactylus rusticus*, were always rather scarce there are getting abundant. Last season I found large numbers of *Harpalus pennsylvanicus*, *Pterostichini* and *Anisodactyli*, species that likewise in the streets of the cities have always been abundant under the feet of the pedestrians; but better species were more rare.

The coleoptera are not only driven away from the neighborhood of the buildings, but the immense wind beaten flags hoisted on their tops, throw in the mornings and evenings their gigantic moving shadows over a large part of the Island, giving them no rest even in the remote spots.

Even if the insects were not driven away, collecting would be unpleasant, through the curiosity of the stupid crowd, that surrounds a collector. What are you looking for? For beetles. What is that? Bugs or insects. "Can you sell them? No. What are you getting them for? We make a collection." What are they good for? and so on, and scarcely has one left before another approaches, and the very same interrogatory is repeated indefinitly.

As soon as it is stated that they cannot be sold they seem to be more inquisitive then ever, and I usually cut them short; I answer the question, what are you getting them for? We make soup of them. Then with looks of intense disgust, the interrogator turns on his heel and leaves us alone.

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Captures of rare Butterflies.

On June 4th. 1879. we took in the net a perfect specimen of Melitaea superba, Streck. the suffused form of M. Phaeton. It was captured just outside of the city limits of Brooklyn, and about two miles from the place where the species described by Mr. Strecker was taken. It is very nearly the counterpart of the type.

In January this year we received about 25 buterflies from a friend in Arcato, N. Cal. She wrote that she "did not suppose they were of any value, and would likely be consigned to the waste basket." Among them was a specimen of Pyrameis Cardui, Aberration Elymi. That specimen did not go in the waste basket by any means, as lepidopterists need not be assured.

GEO. D. HULST.

NEW PUBLICATIONS.

J. L. Leconte, M. D.

The Coleoptera of the Alpine Rocky Mts. Region. Part II.

Bull. U. S. Geol. & Geog. Survey. Nov. 1879. V. 499–520.

Describes as new; Cicindela Willistoni, *Wy.* Dyschirius montanus; Harpalus alienus; Bembidium stabile, B. rubiginosum, B. acutifrons, B. praecinctum, A. tigrinum, (*Cal.*) Hypocyptus nigritulus; Deliphrum expansum; Pseudopsis obliterata; Hydnobius longidens, H- curvidens, H. pumilus, H. obtusus, H. longulus, H. latidens; Clambus vulneratus; Sacium biguttatum; Emphilus americanus; Phalacrus dispar; Euthia longula and impressa with Syn. table and wood cuts of the four species, drawn by Dr. G. H. Horn; Syncalypta grisea; Lymnichus montanus, *Col.* L. nebulosus, *Cal.* L. analis, *Cal.* L. californicus, *Cal.* L. lutrochinus, *Tex.* with syn. table; Paromalus debilis; Pseudebaeus obscurus, Ernobius tristis, E. gracilis, E. luteipennis, *Mass. L. Sup.* E. filicornis, *Mass;* Gastrallus marginipennis; Luperus nigrocyaneus; Chaetocnema cribrifrons, Ch. aeneola; Helops montanus; Tetratoma concolor; Cryphalus mucronatus; Xylocleptes cucurbitæ, *Utah;* Pityophorus deletus; Phloeotribus puberulus.

All above species without given locality are from Colorado.

Geo. H. Horn, M. D.

Trans. Am. Ent. Soc. VII. pp. 257.—340 with plate.

Synopsis of the Monotomidae of the U. S.—Describes the new spec. Monotoma texana, *Tex;* Europs longicollis, *Cal. Nev;* Bactridium Fryi. (*Brazil.*) B. cavicolle, *Pa.*

Revision of the Nitidulidae, p. 267 Desc. as new; Carpophilus decipiens, *Cal, Ariz;* Epuraea integra, *Ariz;* E. fulvescens, *Can,* E. ovata, *Mich. Can. Cal.* E. peltoides, *Mich. Md*; E. umbrosa, *Ind. Teri*; E. scaphoides, *Cal.* **Perthalycra n. g.** Murrayi, n. sp. *Cal. Or. Nev. Ga.* Pocadius dorsalis, *Cal.* **Orthopeplus** n. g. quadricollis, *Col.* Meligethes pinguis, *Nfdld.* Amphicrossus niger, *Ariz.* Cychramus Zimmermanni *S. C;* Cybocephalus californicus, *S. Cal.* Pityophagus verticalis, *Col.*

Notes on the Mycteridae and other Heteromera. p. 336. Describes as new Mycterus canescens, *N- Mex.* Lacconotus pinicola *Col. Nev.* Nothus luteus *Cal.*

Proc. Am. Phil. Soc. 1879. XVIII. 382—408 with plate.

Monographic Revision of the Species of Cremastochilus with Notes on the species described or quoted by Westwood in his Thesaurus Ent. Oxoniensis, and

Synopsis of the Euphoriae of the U. S. (*Euphoria* Burm.=*Euryomia* Burm.) Describes as new: Cr. Westwoodi, *Cal.* Euphoria verticalis, *Cal. Ariz*; aestuosa, *Kans.* hirtipes, *Neb.* devulsa, *Tex.* According to these Revisions our species stand as follows:

Cremastochilus planatus, Lec., saucius, Lec., Wheeleri, Lec., leucostictus, Burm.. Schaumii, Lec., Westwoodi, Horn; angularis, Lec., pilosicollis, Horn; crinitus, Lec., Knochii, Lec., nitens, Lec., variolosus, Kby., squammulosus, Lec., canaliculatus, Kby., retractus, Lec., castaneae, Knoch: Harrisii, Kby.

Euphoria areata Fab. verticalis, Horn. n. sp.aestuosa, Horn, n. sp. Kernii, Hald., hirtipes, Horn, n. sp. sepulchralis, Fabr., devulsa, Horn, n. sp. melancholica, Gory, fascifera, Lec., fulgida, Fab. herbacea Oliv., inda, Linn., Schottii, Lec.

E. basalis, dimidiata and caneseens are rejected, being Mexican species, and E. californica Lec. is according to specimens sent by Mr. A. Salle to Dr. Horn=Glycophana jucunda, Fald. from Japan and China.

W. H. Edwards,

Early stages of Grapta progne, Cramer.

Can. Ent. XII, p. 9.

Experiments upon the Effect of Cold applied to Chrysalids of Butterflies.
Psyche. vol. III, p. 3.

On certain Species of Satyrus.

Can. Ent. XII, p. 51.

Pegala, Alope, Boopis, Paulus.

A. R. Grote.

Crambidae. *Can. Ent. Jan. 1880. XII. p. 15. ff.*
Describes as new; Chilo crambidoides, *Kans;* Crambus dissectus, *N. Y.*, C. occidentalis, *Cal.*, C. exesus, *N. Y.*, C. Goodellianus, *Pa. Mass.*, C. oregonicus, *Or.*, C. anceps, *Cal.* C. laciniellus, *Me.*, C. attenuatus, *Vanc. Isld.* C. edonis. *Kans.*

New Western Noctuidae. (From Col.) *North Am. Ent. p.38 ff.*
Agrotis basalis, A. munis, A. mirabilis; ibidem p. 43. A. conchis, A. olivalis, A. parentalis, A. caenis, A. catenula, A. decipiens, A. minimalis; Pyrrhea stilla, Halesidota trigona, Eustrotia dividua, *Tex.*, Thalpochares, aetherea, *Fla.*

North Am. Phycidae. *ibidem page 49. ff.* new sp: Pempelia contatella, *Me. N. Y.* Nephopterix scobiella, *Tex.* Acrobasis angusella, *N. Y.* Epigraphia eruditella, *Mass.* *Ibidem p. 60.* new sp: Limacodes flexuosa, *N. Y.* L. caesonia, *N. Y.* Monoleuca sulfurea, *Fla.* Tetralopha diluculella, *N. Y.* *Ibidem p. 67.* new spec. Pinipestis reniculella, *N. Y.* and a nice plate of Microlepidoptera.

Can. Ent. XII, 57.

On the described N. A. species of Thalpochares.

V. T. Chambers.

On the Metamorphoses of Insects as illustrated in the Tineid Genus. Lithocolletis, Zeller. (with cuts.)

Jour. of Cinc. Soc. of Nat. Hist. July 1879. vol. II. No. 2. p. 71-93

Chas. Dury.

List of Coleoptera observed in the vicinity of *Cincinnati.*

Journ. of the Cinc. Soc. of Nat. Hist. Oct. 1879.

D. W. Coquillet. *Can. Entomologist XII. 43.*

On the early Stages of some Moths.

C. E. Worthington, ibidem XII. 46.

A List of the Diurnal Lepidoptera of Illinois.
with descr of new spec. Pamphila ursa and P. Pottawattomie!!

Dr. H. A. Hagen,

Destruction of obnoxious Insects, Phylloxera etc. by application of yeast--fungus. Cambridge 1879. When Beer-mash or diluted yeast (half an ounce of compressed yeast to two quarts of water) is applied to the infested plants with a syringe or a sprinkler the fungi contained in the yeast will slowly but surely kill the insects. Will that prove to be the so long sought for remedy to destroy the obnoxious pests.

The idea promising such beneficial results ought to be widely and carefully tested by experiments during the coming year.

Dr. Chas. V. Riley,

The Cotton Worm. *Bull. U. S. Ent. Comm. No. 3.*

An elaborate treatise of 144 pages with 1 fine chromo. Washington, Jan. 1880.

Chas. V. Riley & A. S. Fuller.

The American Entomologist, published by Max Jaegerhuber in New York.

The first numbers bear the same elegant appearance as Dr. Rileys former "American Entomologist", fine paper, first class printing, and excellent wood cuts; containing many articles of great interest, especially to farmers, gardeners, and fruit growers. We wish the paper the best success. F. G. S.

Captures of Bellamira scalaris.

Of this insect quite rare with us, I captured last season five specimens, July 20, one flying, July 22, two sitting on the kitchen door, July 24, one on the same spot, July 26, one flying in my lap while riding in a wagon; August 3rd. one under a piece of wood laid as a trap on a linden stump. Others were captured in previous years on large-flowered thistles, on Phytolacca decandra, and sitting on barkless stumps. They resemble very much during flight as well as at rest, especially the slender male, the common brown wasp, I do not doubt many are mistaken by collectors of coleoptera for hymenoptera. That was the case with myself, when I captured my first specimen.

An apple tree before my house in the country was full of half-rotten apples and consequently much frequented by wasps. One day I saw a wasp which seemed to me to be of a peculiar shape sitting on a branch, but after having taken it with the net, I was very much surprised to find it was a Bellamira instead of a wasp. F. G. Schaupp.

Abundance of Coleoptera on the blossoms of Chestnut Trees.

While the chestnut trees are in bloom (in July) a large number of coleoptera may be obtained by shaking the branches into the beating net. Very often from a single branch 100 specimens fall into the net, mostly Telephoridæ, Mordellidæ and Lepturini. In this way I have captured plenty of *Leptura vittata, proxima, lineola, vagans, subhamata,* etc.

As the trees are usually high, a long stick has [illegible] be fastened to the net and a bunch of blossoms covered by the net and [illegible]en. Single trees at the border of a wood give the best booty. F. G. Schaupp.

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1. *Lecontei*, Dej. Spec. V, 301.—5 mm. Ga. La.
2. *tenuicollis*, Lec. Ann. Lyc. V, 173.—5 mm. Tex. Cal.
   =*tenuicornis*, Chaud. Revue & Mag. de Zool. 1872.
3. *pygmaeus*, Dej. Spec. II, 460.—5 mm. La. Tex.
4. *Hornii*, Chaud, Rev. & Mag. Zool. 1872.—5.5 mm. Tex. Cal.
5. *dorsalis*, Brulle. Hist. nat. IV, 181. t. 6. f. 3. —5 mm. La.
6. *rufulus*, Lec. Ann. Lyc. V, 173. —5.mm. Cal.

CASNONIA, *Lat.*

Elytra ovate, with striæ coarsely punctured in front; red with three spots forming an interrupted transverse band; and the apex black................ **1. pennsylvanica.**

Elytra elongate, striæ nearly obliterated; red with an angulated band and apex black.................................... .... **2. ludoviciana.**

1. *pennsylvanica*, Linn. Syst. nat. II. 620.—Say. Trans. Am. Phil. II. 16=*suturalis*, Chaud. 7.5 mm. N. Y. Mass. Tex. Ks. L. Cal.
2. *ludoviciana*, Salle, Ann. Fr. 1849. p. 297.—7.5 mm. D.C, La. Fla.

LEPTOTRACHELUS, *Latr.*

Piceous, antennæ, palpi, legs and elytra testaceous, the latter with a broad sutural piceous stripe, varies with the prothorax testaceous...................... **1. dorsalis.**

1. *dorsalis*, Fab, Syst, El. I, 229.—8 mm. N. Y. Fla. Ks.

ECA, *Lap.*

Elytral grooves extending over the anterior third of their length........ **1 Sallei.**

Elytral grooves extending behind the middle .... **2. laetula.**

1. *Sallei*, Chevr. Rev. Zool. 1839. p. 308.—3.7 mm. La. Fla.
2. *laetula*, Lec. Ann. Lyc, V. 173.—3.3 mm. Ariz.

LACHNOPHORUS, *Dej.*

Entirely black shining, elytral striæ coarsely punctured in front; fine and impunctured behind.. **1. pubescens.**

Greenish bronze, without luster, elytra white, with the base and dentate band about the middle black, also some faint dusky clouds; striæ very coarsely punctured in front, deep and impunctured behind..................... **2. elegantulus.**

1. *pubescens*, Dej. Spec. V, 30.—4 mm. Ga. Fla.
2. *elegantulus*, Mann. Bull. Mosc. 1843. II. 215.—Lec. Journ. Ac. Phil. IV, 1858. t. 4. f. 1.—5 mm. Tex. Cal. Ariz. Mex.

ANCHONODERUS, *Reiche.*

Black, base of antennæ, palpi and legs testaceous; elytra with finely punctured striæ and interspaces punctulate; each with two rufous spots, one humeral, the other extending from tl l. to the 8th stria near the tip .... **1. quadrinotatus.**

1. *quadrinot* Horn, Trans, Am. Ent. Soc. VII, 53.—7 mm. Tex.

ANCHUS, *Lec.*

Black shining, sparsely pubescent: scutellar stria very short; antennæ, palpi and legs ferruginous: elytra piceous deeply striate in front, striæ obsolete at the tip, interspaces convex sparsely punctulate: prothorax convex elongate, cordate, sparsely punctured; head finely and sparsely punctured, front smooth at the middle............**1. pusillus.**

1. *pusillus*, Lec. Proc. Ac. Phil. 1854. p. 39.—5.5 mm. Mass. Ills. Or. Can.

PLOCHIONUS, *Dej.*

Prothorax much narrower in front, and strongly rounded on the sides, dorsal punctures 2 on 3rd interspace .... **2.**

Prothorax not narrowed in front, broadly rounded on the sides, which are slightly sinuate near the base, color dull ferruginous .... **1. Bonfilsii.**

Uniform piceous, more or less inclining to ferruginous .... **2. timidus.**

Ferruginous, elytra with sutural stripe and sublateral vitta blackish. . **3. amandus.**

var? Ferruginous, elytra with a broad dorsal vitta, concave inwards, leaving a large oval sutural ferruginous spot ....**discoideus.**

1. *Bonfilsii*, Dej. Spec. I, 251.=*valens*, Lec. New Spec. I. 5.—9 mm. Pa. Mex.
2. *timidus*, Hald. Proc. Ac. Phil. I. 298.—6.7—7.5 mm. Ala. Cal. L. Cal.
3. *amandus*, Newm. Ent. p. 32=var. *vittatus*, Lec. Proc. Ac. Phil. II. 48=var. *discoideus*. —7—8 mm. Fla.

LEBIAE.

This genus contains many prettily colored species mostly of small size, but of very predacious habits, they are found under stones, between dry leaves in spring and fall, and during summer often upon herbs and bushes. Dr. Geo. H. Horn, classified them *Trans. Am. Ent. Soc. IV. 130.* as follows.

Lateral lobes of mentum with epilobes .... **Loxopeza.**
Lateral lobes of mentum without epilobes,
  Mentum with a distinct tooth .... **Lebia.**
  Mentum not toothed
    Head behind the eyes constricted........................... **Dianchomena.**
    Head behind the eyes not constricted....................... **Aphelogenia.**

LOXOPEZA. *Chaud.*

Fourth joint of hind tarsus deeply emarginate
  Head and thorax rufous.
    Elytra deeply striate; antennæ pale................................ **1. grandis.**
    Elytra finely striate; three basal joints only pale................ **2 atriventris.**
  Head black; thorax rufous.
    Elytra deeply striate, outer joints of antennæ darker................ **3 tricolor.**

Fourth joint of hind tarsus feebly emarginate.
  Head and thorax rufous; elytra deeply striate .... **4 majuscula.**
  Head black, thorax rufous; elytra finely striate .... **5 atriceps.**

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1. *grandis*, Hentz, Trans. Am. Phil. Soc. III. 58.—9.5mm. N. Y, S. & W, St,
2. *atriventris*, Say, Trans. Am. Phil. Soc. II. 13—6-7 mm. E. M, & W. St,
3. *tricolor*, Say, ibidem, II. 11.—Dej. Spec. 453.—7-8,5 mm. M. St.-Can.
4. *majuscula*, Chaud. Bull. Mosc. 1870. p. 141.—7-9.5mm, Tex. Ariz. S, Cal.
5. *atriceps*, Lec. New. Spec. p. 5.—6.5-7.5mm. Kans, Nebr.

LEBIA. *Latr.*

Elytra with fine or very shallow striæ .... **1.**
Elytra deeply striate; striæ smooth .... **12.**
  1. Tarsal claws serrate rather than pectinate .... **2.**
    Tarsal claws pectinate .... **4.**
  2. Palpi stout, fourth hind tarsal joint emarginate .... **1 pulchella.**
    Palpi slender, fourth hind tarsal joint emarginate .... **3.**
  3. Head and thorax black .... **2 cyanipennis.**
    Head black, thorax red .... **3 ruficollis.**
  4. Head more or less striolate, or coarsely punctured .... **5.**
    Head smooth or very feebly punctured .... **6.**
  5. Head striolate; elytra green .... **4 marginicollis.**
    Head coarsely punctured, elytra ornate .... **5 lobulata.**
  6. Elytra unicolored, green or olivaceous .... **7.**
    Elytra blackish or piceous sometimes with basal spot .... **8.**
  7. Body above unicolored .... **9.**
    Body above bicolored .... **10.**
  9. Color greenish or bluish; legs black .... **6 viridis.**
    Color olivaceous; legs piceo-testaceous or paler .... **7 pumila.**
  10. Head and thorax rufous; abdomen black .... **8 pleuritica.**
    Head black, thorax rufous; abdomen pale .... **9 viridipennis.**
  8. Elytra ornate, with pale spots .... **10 ornata.**
    Elytra piceous .... **11 collaris**
  12. Head longitudinally rugoso-striolate .... **12 analis.**
    Head nearly smooth or very slightly rugulose **13**
  13. Elytra subovate, broader behind .... **13 fuscata.**
    Elytra elongate parallel .... **14 frigida**

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1. *pulchella*, Dej. Spec. II, 457;—6-7 mm. Can. to Tex.
2. *cyanipennis*, Dej. Spec. V. 385.—6 mm. Cal.
3. *ruficollis*, Lec. Ann. Lyc. V, 178.—6 mm. Cal.
4. *marginicollis*, Dej. Spec. II, 271. var.=*affinis*, Dej. Spec. V, 387;=*limbicollis*, Motsch. Bull. Mosc. 1859, II, 145, var.=*cupripennis*, Chaud. Bull. Mosc. 1850. I, 75.—4.5—5 mm. N. A. & S. A.

5. *viridis*, Say, Trans, Am. Phil. Soc. II, 14. Dej. Spec. I, 271; var.=*cyanea*, Dej. Spec. V, 386; var =*smaragdula*, Dej. Spec. V; 387; var. =*moesta*, Lec. Agass. Lake Sup. 203; =Lamprias *cyanellus*, Mots. Kaef. Russl. p. 42. note; Bull. Mosc. 1859; var.=*rhodopus*,* Schwarz, Proc. Am. Phil. 1878. XII, 354.—4.5—5 mm. N. A.
6. *pumila*, Dej. Spec. V, 388.=*floricola*, Harris N. E. Farmer 1828; var.=*maculicornis*, Lec. Ann. Lyc. IV, p. 195.—3–3½ mm. Me.-Ks.-Ga.
7. *pleuritica*, Lec. Ann. Lyc. IV, 193.—6.5—7.5 mm. Can.–Tex.
8. *viridipennis*, Dej. Spec. II, 452;=*borea*, Hentz, Trans. Am. Phil. III, 256.—5–6 mm. Can.–Tex.
9. *lobulata*, Lec. New Spec. p. 5.—3-3.75 mm. Ohio, Va. La.
10. *ornata*, Say, Trans. Am. Phil. II, 13;=*axillaris*, Dej. Spec. V, 372; var.=*marginella*, Dej. Spec. 373:=*apicalis*, Hald:=*brunnea*, Hald. Proc. Am. Phil. 1842. p. 298.—4.5—5 mm. U.S.
11. *collaris*, Dej. Spec. II. 456.=*nigripennis*, Dej. Spec. V, 373.—5 mm. M. & S. States
12. *analis*, Dej. Spec. I, 265:=*ornata*, † Say, var. Trans. Am. Phil. Soc. II, 14. *ornata*,† Lec. Ann. Lyc. IV, 22; var.=*appendiculata*, Chaud. Bull. Mosc. 1870. II, 212.—5-6 mm. N. & S. States.
13. *fuscata*, Dej. Spec. I, 270. 5—7.5 mm. Can.–Fla.–Mo.
14. *frigida*, Chaud. Bull. Mosc. 1870. II, 242. ** (? var. of fuscata.) —4.5 mm. Mass.

DIANCHOMENA, *Chaud.*

Thorax narrowly margined. Head and elytra green, thorax rufous .... 1 **abdominalis.**
Thorax widely margined.
  Head rugose at sides; elytra shining, moderately striate .... 2 **scapularis.**
  Head all rugose punctate; elytra less shining, deeply striate .... 3 **miranda.**

1. *abdominalis*, Chaud. Bull. Mosc. 1843. p. 104. ibidem 1871. I, p. 47.–5mm. Tex. Mo. Ga.
2. *scapularis*, Dej. Spec. V, 377. *Lebia solea*, Hentz. Trans. Am. Phil. III, 255. *conjungens*, Lec. Ann. Lyc. IV, 194.—4.5—6 mm. M. St. Ks. Dac.
3. *miranda*, Horn, Trans. Am. Ent. IV, 139.—5.5 mm. Ariz.

APHELOGENIA, *Chaud.*

Thorax widely margined.
  Head and thorax pale testaceous, body beneath pale.
    Elytra distinctly striate; with narrow black stripes..................... 1 **vittata.**
    Elytra finely striate; stripes broad............................... 2 **furcata.**
    3 **Spraguei.**
  Head black, thorax brownish; abdomen black
    Elytra with striæ obsolete, ornate with spots......................... 4 **guttula.**
Thorax narrowly margined.
    Elytra black with two white stripes; abdomen rufous................. 5 **bivittata.**
    Elytra black with one white stripe, two apical segments of abdomen red. 6 **bilineata.**

1. *vittata*, Fab. Syst. El. I, 202; Dej. Spec. I, 267.=*flavovittata*, Chev. Col. Mex. Cent. II, No. 161.—6 mm. Pa.-Tex.
2. *furcata*, Lec, Ann., Lyc. IV, 193.—6–7.5 mm. Can.-Kans.–Cal.
3. *Spraguei*, Horn, Trans. Am. Ent. IV, 139.—6 mm, Tex.
4. *guttula*, Lec. Ann. Lyc. V, 178.—3–4 mm. Cal Nev. Utah.
5. *bivittata*, Fab. Ent. Syst. Suppl. p. 59-*quadrivittata*, Dej. Spec. I, 268.–5.5mm. W & S St.
6. *bilineata*, Motsch. Bull. Mosc. 1859. III, 145. p. III, f. 6.—5.5mm. Cal.

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* Dr. Horn, considers this merely a variety of viridis, corresponding with similar pale-legged forms of *pumila*. ** See Bull. Mosc, 1870. II, 170. ff. and 1871. p. 40 ff. Chaud. Review of the species of Læbiidæ.

SYNOPTIC TABLE OF LEPIDOPTERA.

(Argynnis.)

Female: Upper side black, with blue or green reflections; a marginal, submarginal, and median band of white or bluish-white spots on primaries; secondaries have a marginal row of bluish-white bars, and a submarginal metallic band, which is divided by the nervures into oblong spots, each of which, except the two extreme, incloses a rounded black spot near the anterior edge. Under side of primaries: ground color (except the apex, which is dull brownish-black) black, with a bluish reflection, and with irregular spots of bluish white; secondaries, from base to beyond middle of wing, dull brown; border, blackish brown; nacred crescents same as male. Expanse of male, 3 3-10 inches; of female, 4 inches. Virginia west to Arkansas.

2. A. Idalia (*Drury*). *Male:* Upper side of primaries bright fulvous, with a narrow border of black and the black markings common to all *Argynnids;* secondaries bluish black, with a marginal row of fulvous and a submarginal row of dirty cream color. Below: primaries fulvous, with a marginal row of silver crescents and some patches of silver on and near the costa; secondaries olive brown, with three rows of irregular patches of dull silver. The female can be easily distinguished by having the marginal row of spots on secondaries cream color, and by the presence of similar spots on the primaries. Expands 3 to 4 inches. Massachusetts to Nebraska and Arkansas.

Suffused variety, "Ashtaroth."—FISHER.

3. A. Nokomis (*W. H. Edwards*). *Male:* Upper side bright fulvous, with slight black borders; primaries with a marginal and submarginal row of black spots, and a median row of larger spots of the same color, the cellular area being crossed by irregular black markings; secondaries with the corresponding rows of marginal, submarginal, and median rows of black spots, which are more lunular, and a few heavy black markings between the median row and the base; under side of primaries fulvous—yellow from median band to outer margin. The markings of upper side show through, with the addition of silver markings on marginal band and at apex of submarginal row; of secondaries yellow, the black crescents and spots of upper side appear through as silver edged with black.

Female: Upper side dark chocolate-brown; primaries spotted with yellow, viz.: an irregular row of marginal spots, a submarginal and median row of squares; secondaries with a belt of large, oblong, yellow crescents, the five largest of which each inclose a black spot; a double band of marginal yellow crescents, the yellow more or less tinged with green scales; under side of primaries bright fulvous, apical area yellow; of secondaries yellow, with greenish scales, especially from median band to base. All the markings same as male, but heavier. Expands 3 4-10 to 3 6-10 inches. Arizona.

4. A. Nitocris (*W. H. Edwards*). *Male:* Upper side bright-red fulvous, marked as in Nokomis; under side of primaries cinnamon-red, at apex ochre-yellow; of secondaries, deep ferruginous, with a broad, reddish, ochraceous belt; silver spots as in Nokomis.

Female: Upper side blackish brown, darker than Nokomis; extra discal spots in transverse rows pale yellow; submarginal spots whitish; under side of primaries fiery red, the apical area being yellow; secondaries blackish brown, belt yellow. Expands about the same as Nokomis. Arizona.

5. A. Leto (*Behr.*). *Male:* Upper side much like Nokomis, but not so bright, and darker at base; under side of primaries pale fulvous, with markings like Nokomis, but shaded with brown, and having no silver on marginal crescents; of secondaries dull ferruginous, with a belt of immaculate yellow; silver spots placed as in Nokomis, but more irregular.

Female: Upper side dark ferruginous brown, from base to middle of disk, and beyond, to the brown marginal band, grayish yellow; under side same as above, but paler; markings same as male. Expands 2 1-2 to 3 inches. California, Oregon.

6. A. Cybele (*Fabr.*). *Male:* Much like Leto, marginal bands and other black markings heavier; under side of posteriors more heavily silvered.

Female: Ground color somewhat paler, from base to median band dark chocolate brown; all black markings much heavier; under side same as male. Expands 3 to 4 inches. Atlantic States to Nebraska.

7. A. Carpenterii (*W. H. Edwards*). *Male:* Upper side yellow fulvous, marked as in Cybele; under side of primaries yellow-brown, tinted red next base and over inner margin; submarginal and subapical spots silvered; secondaries deep ferruginous; belt clear reddish buff; all spots silvered.

Female: Upper side more yellow; basal area very dark; under side of primaries more red than male; secondaries deeper ferruginous. Very close to CYBELE. Expands 2 1-2 to 2 3-4 inches. Arizona.

8. A. Aphrodite (*Fabr.*). Very much like CYBELE; markings on upper side slighter; under side of primaries more fiery; the yellow belt on secondaries is much narrower, often quite obsolete. Expands 2 to 2 5-8 inches. Northern and Middle States.

9. A. Alcestis (*W. H. Edwards*). Upper side bright-red fulvous; markings as in APHRODITE; under side of primaries fiery red, at apex chocolate brown; spots silvered; of secondaries either dark-chocolate brown or deep ferruginous brown from base to margin, without mottling of other colors in the disk; spots well silvered.

Female: Darker than male, lines heavier; under side darker than male; secondaries sometimes olive-black, as in IDALIA. Expands 2 3-4 to 4 inches. Western States.

10. A. Atlantis (*W. H. Edwards*). *Male:* Upper side bright fulvous, with heavy black borders, black markings much the same as in CYBELE and APHRODITE; under side much like CYBELE, but the secondaries are darker and the belt narrower, and of a clear yellow.

Female: Same as male, but more heavily marked. Expands 1 3-4 to 2 3-4 inches. Northern and Middle States.

11. A. Electa (*W. H. Edwards*). Upper side reddish fulvous; markings light; mesial band of secondaries confluent; under side of primaries pale cinnamon-brown, apical area buff; spots imperfectly silvered; secondaries brown ferruginous, mottled buff on disk; belt buff, sometimes clear and sometimes narrow, and encroached on by the ground color; spots vary, either well or imperfectly silvered.

Female: More tawny, markings heavier, otherwise nearly as in male. This species has been confounded with ATLANTIS. Expands 2 1-4 to 2 1-2 inches.

12. A. Columbia (*Hy. Edwards*). *Male:* Upper side pale-red fulvous; the mesial bands of both wings macular; under side of primaries pale fulvous, at apex buff; spots silvered; of secondaries light ferruginous, very little mottled with buff; belt buff, narrow, encroached on by the ground color; spots small and well silvered.

Female: More tawny; lines heavier on secondaries; the mesial band is macular and spots bent, partly lanceolate. Expanse of male, 2·3 inches; of female, 2·5 inches. British Columbia.

13. A. Nausicaa (*W. H. Edwards*). *Male:* Upper side deep-red fulvous, under side cinnamon-red; secondaries dark ferruginous; band narrow, buff, and much encroached on by the ground color; all spots well silvered. Expands 2·5 inches. Arizona.

14. A. Bremnerii (*W. H. Edwards*). *Male:* Upper side deep fulvous; black markings heavy; mesial band on secondaries confluent; under side of primaries red, apical area buff; spots either buff or well silvered; of secondaries deep ferruginous, a little mottled with buff; belt sometimes clear buff, but sometimes encroached on by the ground color; spots large and well silvered.

Female: Paler. Expanse of male, 2·4 inches; of female, 2·7 inches. Oregon, British Columbia, Vancouver's Island, Montana.

15. A. Behrensii (*W. H. Edwards*). *Male:* Upper side dull fulvous; under side of primaries buff, at base ferruginous; submarginal and subapical spots silvered; secondaries deep, dense ferruginous, except belt, which is very narrow and violet brown; spots well silvered.

Female: Upper side nearly as in male, markings heavy; under side of primaries at base and to hind margin deep fulvous; secondaries as in male. Expanse of male, 2·2 inches; of female, 2·4 inches. California, Mendocino.

16. A. Bischoffii (*W. H. Edwards*). *Male:* Upper side fulvous, markings light; under side of primaries pale fulvous, apical area ochraceous; marginal markings often obsolescent; of secondaries buff, tinted with ochraceous, greenish at base, sometimes reddish brown on disk; band buff; spots usually without silver, sometimes a few silver scales.

Female: Basal area obscured, the fulvous limited to outer limb; spots on under side usually silvered. Expanse of male, 1·8 inches; of female, 1·9 inches. Alaska.

17. A. Opis (*W. H. Edwards*). *Male:* Upper side yellow fulvous, markings delicate; under side of primaries buff; of secondaries pale ochre, mottled with red; belt clear yellow; no silver.

Female: Color deeper, markings heavier; under side of primaries red tinted, secondaries as in male. Expanse, 1·5 inches. British Columbia, Bald Mountain.

We hereby acknowledge our thanks to Mr. W. H. Edwards, of Coalburgh, West Virginia, to whom we are deeply indebted for his kindness in furnishing us with descriptions of species not represented in our cabinets.

BULLETIN

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Descriptions of some new Species of Catocala.

BY HENRY EDWARDS.

It is not always safe to describe species in a group so liable to variation as the present genus, from single specimens only, but I have submitted my examples of the following forms to Mr A. R. Grote, who pronounces them distinct, and I therefore depart from what has been with me an established rule.

The western species of Catocala seem all to belong to the section with red under wings, and are in consequence very difficult of determination. Future research may reduce the number of our species but it is perhaps best that all strongly marked forms should be described and bear distinctive names.

I have adhered to my original idea of calling the Pacific species of these beautiful insects after the heroines of Shakespeare.

Catocala Hermia, n. sp.

Size of Briseis, Edw. and closely allied both to that species and to Mariana, Hy. Edw.

Primaries with all the lines and marks very distinct. Ground color, brownish grey. Basal half line quite straight. T. a. line grey, edged with black, resting on costa in a black cloud. Near costa it bears a very small but distinct tooth and passes into a waved line with very narrow sinuation.

The t. p. is black, edged with brownish grey. It commences on the costal nervure and runs suddenly far towards the posterior margin, the usual bifurcate point being very distinct and sharp. From this the line bears several irregular dentations, and runs to the internal margin at a point almost close to the t. a. line. The course of the t. p. line is therefore rather singular, more waved and irregular in its outline than in any species known to me, and affording to my mind the best character of the present form. The submarginal line is whitish, edged with greyish brown, and the marginal lunules are thick and heavy looking. The reniform spot is black, edged with whitish, the sub-reniform grey, produced posteriorly into a greyish streak which rests on the t. p. line.

Secondaries lively rose color, or pale crimson, the margin white through its entire length, the median and submarginal bands rather wide, and with scarcely any irregularity of outline. Thorax concolorous with base of the primiaries. Abdomen light drab. Under side very similar to Briseis.

Colorado. Mr. H. K. Morrison.

1 female. Coll. Hy. Edwards.

Catocala Portia, n. sp.

Size of Californica, W. H. Edw. Allied to Hippolyta, Hy. Edw. and Stretchii, Behr.

Primaries very narrow, and much produced at the apex, pale grey, sprinkled with black irrorations. All the lines and marks very confused and indistinct, except the t. p. which is black, regular in its course, and running from a point on costa 3 lines from apex, to the middle of internal margin. The dentations are small. The reniform is almost obsolete, being enclosed in a blackish cloud. The sub-reniform is whitish, and rests on the deepest tooth of the t. p. line. Sub-marginal line wanting, and the marginal lunules very small linear.

Secondaries orange red, a little paler than Walshii. Median black band very narrow, broadest at costa, and terminating in a point, a short distance from anal angle. Sub-marginal band rather broad, with the inner edge evenly toothed for over half its length, with a very deep and broad tooth near the anal angle. Margins pure white, with an orange cloud between the margin and submarginal band, as in Walshii.

Underside with the black and white bands well defined and the red of the secondaries covering the lower half of the wing.

I have no doubt of the distinctness of this species which was taken at Lake Tahoe, California by my friend, Mr. T. L. Mead.

1 male. Coll. Hy. Edwards.

Catocala Ophelia, n. var.

Under this name I wish to call attention to a very beautiful and interesting form of C. Verrilliana, Grote, in which the primaries are of a bright rosy grey, with the lines and marks rich velvety black. The secondaries have the median band very strongly hooked at its termination, and joined to a dark shade, which runs quite to the base of the wing. In all other respects the same as Verrilliana.

Mendocino Co. Cal. Mr. O. Baron.

1 male. Coll. B. Neumoegen.

Catocala Olivia, n. sp.

Of the Fratercula and Gracilis group. Size of Grynea. Primaries olivaceous. On the internal margin and running nearly to the middle of the wing covering the space of the subreniform spot is a large sub-oblong brown patch, narrowest anteriorly, not reaching the base of wing, and toothed posteriorly. Basal half line indistinct, t. a. line running very obliquely from costa, and resting on the brown patch alluded to. T. p. line obsolete, represented on costa by some black dashes. Sub-marginal line even, almost straight, with several fine teeth. Marginal lunules small but distinct, edged posteriorly with fawn color. Reniform spot very faintly defined. Secondaries orange yellow. The median black band is rather narrow, constricted in the middle, and joined to a black clouded streak which runs along the abdominal margin to the base of the wing. Sub-marginal band broad on costa, narrowing towards the anal angle, where it is interrupted by the orange ground color passing to the margin of the wing. The band continues along the anal angle joining the blackish shade of the abdominal margin. Fringes fawn color, with blackish streaks at the extremity of the median nervules. Thorax olivaceous flecked with a few black dashes. Abdomen orange brown, darkest posteriorly, with a small longitudinal white spot at base. Underside pale orange. Primaries with broad sub-marginal, and narrow median band black. At the base there is a linear black streak. Margins dusky, with the fringes dull orange, interrupted with black. Secondaries with the markings of the upper side faintly reproduced but the marginal band is continuous, i. e. not interrupted by the orange blotch. Fringes as in the upper side.

Closely allied to Gracilis, Edw. but abundantly distinct.

S. W. Texas. Mr. Boll. 1 male Coll. B. Neumoegen

Catocala Gisela, n. sp.

Expanse 1⅝ inches. Head grayish black; thorax gray with black spots; palpi pale, tip brown; abdomen brown, beneath somewhat lighter,

Upper surface. Primaries reddish brown, somewhat lighter at the base, with a broad silvery border at the exterior margin. Reniform dark edged with black Transverse lines very indistinct; the t. a. line visible across the wing, but the t. p. line only observable at the main dentations.

Secondaries; ground color yellow with broad external black border and somewhat broad interior black band, leaving a very narrow band of yellow between the two bands of black. The yellow is rather indistinct because of black, mixed with it.

Habitat Georgia.

One specimen in my collection, and another in Mr. Fr. Tepper's of Brooklyn. The above species has on the primaries much the appearance of Cat. Scintallans, with the hind wings much as in Cat. Polygama but darker.

Julius L. Meyer.

Catocala pura, n. sp.

Expands three inches. Head gray; palpi gray, black on tips; thorax gray, collar and tegulæ edged with indistinct shading; body gray, with a brownish tinge; anal tuft lighter.

Fore wings with ground color very light, giving much the same general appearance as Semirelicta; surface squammose; markings generally indistinct. Base a little more darkly marked making an indistinct basal dash; subreniform closed; t. p. line with the two main dentations spreading and not largely produced, the lower especially and with the dentations beneath these somewhat exaggerated giving an irregularly serrated appearance; submarginal line quite distinct and against the white surface color showing very clearly its serrations; fringe gray.

Hind wings red as in Briseis, median band as in Californica, but narrower and prolonged hardly more than two thirds across the wing; fringe pure white; there is no shading of red on the outer edge or the apex of the wing. Underneath the wings are much as in californica but with the median band narrowed and ending posteriorly in a round bulb.

Habitat Colorado.

Mr. Strecker, has ten or twelve specimens in his possession which are uniform with the type.

I requested Mr. Strecker to name the species as I got my material from him. but he compelled me to take the burden and the honor.

GEO. D. HULST.

Catocala carissima, n. var.

We have a form of Catocala cara which is not found in the North and which seems to be the constant form in the South. The primaries are more generally suffused with dull greenish yellow atoms. They have brownish patches injected along the Costa between the transverse lines. They have a blotch of greenish yellow near the apex. The transverse lines are more distinct and the dentations of the t. p. line are comparatively very short. This form common enough in collections we think deserves a varietal name and give one. as above.

GEO. D HULST.

Catocala dejecta, n. sp.

Intermediate between Ulalume and Desperata, bearing about the same relation to Desperata that Ulalume bears to Lachrymosa.

Expands 3 inches, collar black; tegulæ gray powdered with black.

Fore wings a little more narrowed than in Desperata, more in the shape of Robinsonii. Surface smooth with a bluish shading; no basal dash; transverse lines distinct; sub-reniform, in all known examples widely open, whitish. Reniform with a slight shade of brown within; t. p. line with dentations much less produced than in Desperata; on the inner margin it closely approaches the t. a. line and is hardly separated from it; there is no apical dash or tendency towards one.

Hind wings black; fringe white, with a marked tendency to dirty gray, becoming blackish at the end of the veins.

Dejecta is the form generally marked Ulalume in collections. It is found to some extent in the Northern States. I have never seen a specimen of the typical Ulalume from any part of the country but Texas.

The type of of the species is in the collection of Rev. Geo. D. Hulst of Brooklyn L. I. I have also two corrosponding specimens in my collection.

H. STRECKER.

Notes on Coleopterous larvae.

BY F. G. SCHAUPP.

On page 24 of this volume I mentioned on the article, "Inhabitants of a beech-tree." the captures of 15 larvæ evidently of Osmoderma, this being the only Lamellicornide of such a size found at that locality, on July 15, 1879.

Having put five in Alcohol I placed the remaining ten into a tin box with the same black earth in which they were fonnd (in a hole of the beech tree.) Five died; October, 25–29 the rest made oblong cocoons of earth, outside rough, inside very fine and smooth, 30 mm. long and 24 m.m. broad, considerably firm.

At that time all the earth in the box had evidently passed through the larvæ, as it consisted of oblong particles looklng like excrements.

Nov. 25 one broke its cocoon, but made a new one after two days, Dec. 20 another broke its cocoon, and lived in the ground till about April 20.

May 9 one imago appeared, *Osmoderma scabra*, Beauv; by openning the other cocoons I found one pupa which I preserved in Alcohol, and two larvæ, one of which pupated May 16.

The Annual Meeting of the Entomological Club of the American Association for the Advancement of Science

Will be held at the Museum of the Boston Society of Natural History, corner of Berkeley and Boylston Sts., Boston, commencing at 2 P. M. Tuesday August, 24, 1880.

It is proposed to send to every member of the Association and to all others who may favor the undersigned with their address for that purpose, a circular announcing the special subjects which will be presented at this meeting of the Club; and therefore all entomologists who desire to read communications at that time are requested to notify one of the undesigned before August 1st. This will ensure a fuller discussion of the topics presented. and it is hoped a larger attendance.

B. Pickman Mann, Secretary. Cambridge, Mass.
Samuel H. Scudder, Pres. Cambridge, Mass.

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EXPLANATION

OF

TERMS USED IN ENTOMOLOGY.

A.

A as prefix of a word means wanting, without. a-pterus wingless.

abbreviatus, (ated), shortened, not extending to the extremity of a given part.

abdomen, posterior part of the body, divided into segments or rings.

abscissus. cut off, as when a part has a straight margin.

absconditus, hidden, concealed, when a part is retracted into another.

acetabuliform, like a circular shallow saucer with incurved sides.

acetabulum, cavity for the insertion of the legs.

aceus or *iceus*, affixed to a word means similar to.

aciculatus, having a surface as if scratched with a needle.

acicular, needle-shaped, closely allied to *acerose*, and more slender than *subulate*, with a more delicate and pungent point.

acinaciform, cimitar-shaped ; sabre-shaped, one thick and straight edge, the other curved and thin.

aculeatus, (ate) prickly ; furnished with prickles, with slender pointed processes.

aculeus, small, sharp point ; the ovipositor, the appendage with which the female lays her eggs ; (also the sting of bees, wasps etc.)

acuminatus, becoming gradually narrower, tapering to a point ; a point lengthened out.

acutus, sharp pointed ; becoming regularly narrower and terminating in a point.

adnatus, grown together, connected, abdomen attached to the thorax without the intervention of a petiole.

adspersus, dispersed, with markings consisting of closely standing small spots.

aduncus, bent, a part slowly bent through its whole extent.

aeneus, bronze-colored, the green color of old brass.

aequale, is a part with equal diameter.

aequilatus, is a part of equal breadth.

aeriductus, spiracle ; the lateral appendages on the ventral segments of some larvæ (Dytiscus, Gyrinus etc.)

aeruginosus, light bluish-green, the color of verdegris.

affinis, related to, joined in affinity.

aggregatus, by heaps ; in crowds on one spot (aggregate eyes).

ala, wing ; *alatus*, winged.

albidus, dusky white ; *albus*, white.

alligatus, fastened by a thread, like the pupa of Papilio etc.

alternatus, by turns, (striæ alternately punctate).

alutaceus, pale brown, (leather color).

alveolatus, furnished with cells ; deeply pitted.

alveolus, a cell like that of a honey-comb.

amethystinus, blue with much red, like the brilliant colors of the amethyst.

ampliatus, moderately dilated.

ambulatory, formed for walking. See saltatory, cursory.

anal angle, the inner posterior angle of the inferior wings of Lepidoptera.

anastomosis, the connection of two nervures of wings, by means of a transverse nervure.

anastomosing, inosculating or running into each other like veins.

anceps. two edged, very similar to *ensiform*.

ancipital, having two opposite edges or angles.

angulatus. when the angular margins do not exclusively elbow outwards, but also inwards, (e. g. Thorax of Prionus).

angulus, angle, the spot where the two margins of a body meet.

angustatus, narrowed, begining with a narrow base and then dilating.

annulatus, furnished with differently colored rings.

annulus, a colored ring around the body.

ante, before ; *antepenultimate*, the last but two.

antennae, two articulated organs of sensation, situated on the head.

anthracinus, black with a bluish tinge.

anti, against ; opposite, contrary.

anticus, frontal.

antlia, after Kirby the spiral tongue of Lepidoptera (sucker).

antrorsum, directed towards the front.

anus, the terminal part of the abdomen ; the posterior opening of the alimentary canal.

apex, terminal portion of any organ or part of the body.

apicalis, a part rising at the tip of a body.

apiculatus, covered with fleshy, erect, short points. See *verrucose*.

apodal, (larvæ) with simple tubercles instead of feet. See Parapoda, Pseudopoda.

apophysis. the coxæ ; the two small basal joints of the feet. See trochanter.

approaching, converging.

approximatus, near to; near together.

appendix, appendage.

apterus, wingless.

aquamarinus, sea-green, pale green with predominant blue and a little grey.

arachnoideus. cobweb-like; resembling a cobweb.

arcuatus, arched, bowed. (antice, postice, lateraliter-arcuatus).

arcus, bow ; apart of a circle, but not over a half.

area, *areola*, wingcells, cellules; the membranaceous spaces between the nervures.

argenteus, silvery.

aristate, furnished with a hair at the terminal joint of the antennæ.

armatus, armed, e. g. dente armatus with a tooth.

arthrium, the minute concealed tarsus in Pseudotetramera and trimera.

articulatus, divided into distinct joints.

articulatio, joint, generally used to denote the space between two joints.

articulus, *artus*, the members ; (wings, feet, antennæ, palpi)

asperus, rugged ; with very distinct elevated dots, more uneven than scabrous.

assurgent, rising ; declining at the base and rising in a curved manner to an erect posture.

ater, deep black. *aterrimus*, the deepest black.

atomus, a minute dot or point; *atomarius*, furnished with such dots.

atro-coeruleus, black-blue, *atro-purpureus*, dark purplish, nearly black.

atro-virens, dark green, approaching blackish.

attenuatus, growing slender ; tapering.

aurantiacus, orange colored, a mixture of yellow and red. See fulvus.

auratus, *aureus*, golden yellow,

auricula, (auricle) an appendage resembling a little ear.

auriculate, furnished with such appendages e. g. the antennæ of Gyrinus.

auritus, with two such appendages on the head.

aurichalceus, the metallic yellow of brass.

auroreus, *flammeus*, red like the aurora.

axillaris, (ry) placed in the crotch or angle of the origin of two bodies ; arrising from the angles of ramification.

azureus, azure-blue ; nearly *caerulus* or *ultramarine*.

B.

badius. liver brown, clearer and lighter than castaneus.
barb, a kind of spine armed with teeth bending backwards.
barbatus,-ted or *bearded*, tufted with hair.
basalis. basilar, relating to the base, arising from the base.
base, that side whereby a portion is affixed to the body ;—of thorax where it is attached to the elytra or wings ;—of elytra or wings, where they are attached to the thorax ;—of head where it joins the thorax ;—of maxillæ the part below the palpus, including cardo and pecten ;—of abdomen the part nearest to the thorax.
bicaudatus, having two tails or processes.
bicornutus, two horned.
bifid, cleft; cloven in two. See emarginate, furcate, biparted.
bijugum. in two pairs.
bifurcatus, furcate, a part not over the half of its length divided into two dull points.
bilateratiter, bilateral, on both sides.
bilamellar, divided into two laminæ.
bilobatus, divided into two lobes
bilocular, having two cells or compartments.
binate, in pairs; consisting of a single pair.
binus, double, (most organs of Insects).
biparted, profoundly divided into two parts.
bipupillate. an ocellate spot, having two pupils or dots within it, of a different color.
biradiate, consisting of two rays.
biscuspis, *bicuspidate*, ending in two points.
bisetosus. furnished with two setaceous appendages.
bisinuatus, bisinuate, a margin having two sinuations or incisions.
bivalve, (proboscis) consisting of two valves or divisions united, so as to form a tube.
boreal, of or belonging to the north.
botryoidal, clustered like a bunch of grapes.
brachelytra, short winged.
branchiae, air-tubes of aquatic larvæ, see *tracheae*, *stigmata*, *spiracles*.
brachial nervures, nervures of the anterior wings, that originate at the thorax and run somewhat parallel with the interior edge, towards the posterior angle or posterior edge often connected with the cubital cellules by means of recurrent nervures.
brevis, *breviter*, short.
bronze, the color of old brass.
brunneus, pure brown, reddish brown.
buccatus, blown up, distended ;—*tumidus*.
bulla, blister.
bullatus, *bullosus*, blistered.

C.

caducus, shedding; easily and quickly falling off.
caeruleus, or *coeruleus*, sky-blue, light blue.
caeseus, a pale grey, sordid blue.

calathiform, ball-shaped, hemispherical and concave. See *crateriform*, *proculiform*.

calcar, (plural calcaria) a spur; is moveable while *spine* (thorn) is not.

calcaratus, having a spur.

callosus, a substance without pores, harder than the surrounding matter and usually elevated above it.

callus, callous, a thick swollen lump.

calyculatus, double cupped, one cup placed within another.

calva, skull-cap; see epicranium.

campanulatus, bell-shaped; more or less ventricose at the base and a little recurved at the margin.

canaliculatus, furnished with longitudinal furrows.

cancellatus, (cancelled), cross-barred; latticed; having longitudinal lines or grooves decussate by transverse ones.

canus, hoary, with more white than grey.

capillatus, clothed with long slender hairs. See crinitus.

capillaris, hair-like; long and slender hairs. See filiform.

capilli, hairs of the head; e. g. in some Phryganidæ etc.

capillitium, capuch, the hairy pronotum in many Noctuidæ.

capitatus, having a head; terminating in a little head or knob; it differs from clavate by a more abrupt enlargement, (antennæ clavatæ).

capitulum, the dilated or labiated termination of a proboscis; the enlarged tip of the antennæ.

caput, the head,—cephalon (greek kephalon).

capylus, a hump on the upperside of the segments in many larvæ.

cardo, (plur. cardines), hinge; the basal transverse piece of the maxillæ in coleoptera.

carina, a keel; a sharp, elongated, gradually rising elevation on the underside of a body.

carinula, the longitudinal elevation at the middle of the snout in Curculionidæ.

carinulatus, *carinate*, keeled, having a longitudinal prominence like the keel of a boat, but also used of the upper surface.

cariosus, corroded, having the appearance of being worm-eaten

carneus, flesh-colored.

carnosus, of a soft fleshy substance

carpus—punctum, the joint in the wings of some insects, by means of which it is folded transversely; the point at the extremity of the radius and cubitus of the anterior wing.

cartilagineus, of the consistence of cartilage or gristle; thicker than corneus but somewhat transparent, flexible and always whitish.

caruncle, a soft, naked, fleshy excrescence.

caryophylleus, clove-brown, dark brown with bluish tint.

castaneus, chestnut-brown, bright red brown.

cataphractus, invested with a hard callous skin or with scales closely united.

catenatus, with longitudinal elevations, connected like the links of a chain.

catenulatus, the same but with smaller elevations.

catervatim, by heaps.

caterpillar, the larva or eruca.

cauda, the tail; the posterior terminal part of the abdomen; an appendage terminating the abdomen. See anus.

caudatus, furnished with a tail; e. g. the hind wings of most Papilio etc.

caudulae, tailets; little tails.

cavitas, cavity.

cellula, a portion of the wing, included between nervures. See radial cellule.

cephalon, head. See *caput*.

cephalotheca, the cover of the head in pupæ.

ceratotheca, the cover of the antennæ in pupæ.

cerci, two short, lanceolate, usually flat appendages of the anus.

cernuous, bent, the apex bent downward. See nutant.

cervinus, reddish grey, red with dirty grey. (from cervus the stag.)

cervix, crag; the upper part of the neck.

cespitosus, matted together.

chalybaeus, steel-blue.

cheek, the gena, a portion of the head, beneath the eyes on each side.

chela, the terminal portion of a foot, which has a moveable lateral toe, like the claw of a crab.

chelatus, scissor-shaped.

chitin, the corneous substance of the elytra in coleoptera ; the chemical base of the system of the articulates.

chrysalis, pupa, cocoon ; the third stage of the insect from the egg.

cicatricosus, scarry, a surface having rows of scars with elevated margins, like those of small pox.

cicatrix, a scar ; an elevated ridged spot.

ciliatus, fringed, set with parallel, short stiff hairs, bristles etc. See crinitus.

cilii, fringes.

cinereus, ash-colored ; grey tinged with blackish.

cingulatus, *cinctus*, with a colored band.

cinnabarinus, cinnabar or scarlet red.

circinal, spirally rolled inwards and downwards as in the lingua (tongue) of Lepidoptera.

circiter, about.

circular, is a round surface with its diameter equal on all sides. See rotundus.

cirrosus, a part with somewhat dense curled hair.

cirrus, a curled lock of hair placed on a thin stalk.

citrinus, yellow like a lemon. See flavus.

classis, class, one of the principle divisions in a system or arrangement of natural bodies.

clintheriformis, plate-shaped.

clypeatus, shield-shaped ; e. g. the head of Copris.

clypeus, the superior portion of the head in coleopterous insects—epistomis.

coactus, condensed ; of a short, stout form.

coadunatus, joined together at the base ; two or more joined together ; elytra permanently united at the suture.

coarctatus, contracted, compact ; opposed to *effuse* ; (Metamorphose) that species of change in which the pupa assumes a cylindrical shape, all the members of the body being concealed. See incomplete, semicomplete.

cocardes, retractile versicular bodies on each side of the *stethidium* of some insects of the genus Malachius.

coccineus, cochineal-red, dark red with some blue.

cochleatus, twisted spirally like a screw or a univalve shell.

cocoon, a follicle. See pupa, chrysalis.

coenogonosus, oviparous at one season of the year and viviparous at another.

coeruleus, cæruleus, sky-blue ; pale blue.

coleoptera, order of insects, having corneous elytra but not lapped over each other at tip, coriaceous elytra.

collare, the anterior part of the thorax.

collum, neck ; the posterior part of the head. Some authors call this part collare.

columnar, differs from cylindrical by tapering towards one end, like the shaft of a column.

comatus, when the upper part of the head or vertex alone is covered with long hair. See *crinitus*.

commissura, anastomosis.

comosus, ending in a tuft or kind of brush. See plumose.

complanatus, compressed, flattened ; a body with the horizontal diameter longer than the vertical, and above and beneath nearly flat. See depressus, *compressus*.

complicatus, laid longitudinally in folds.

compressus, flattened laterally, the horizontal diameter much shorter than the vertical. See complanatus, depressus.

concavus, when the surface gradually declines towards its centre, which thus becomes the deepest. See convexus.

concinne, neat, fine.

concolor, equally colored. See discolor.

conduplicatus, doubled, or folded together.

confertim, crowded, clustered. See sparsely.

confluens, running into each other.

confuse, a marking with indefinite outlines.

congener, belonging to the same genus.

congestus, heaped together, e. g. points forming a spot.

conglobatus, with all diameters nearly equal.

conglomeratus, congregate.

conicus, conical, a round body, its base being a flat circle, and its apex a point.

coniferus, a surface bearing a cone.

conjugatus, consisting of a single pair.

conjunctim, united, taken together.

connatus, grown together, e. g. the elytra of Amblychila are connate at the suture.

connivent, convergent or approaching ; closing; e. g. the elytra of most coleoptera.

conspersus, see adspersus, dispersed.

conspicuus, distinct ; to be seen without a glass.

conspurcatus, confusedly sprinkled with differently colored or darker spots.

contiguus, touching, placed so near as to touch. See approximate.

contorted, twisted ; incumbent upon each other in an oblique direction.

convergens, see connivent.

convexus, when a surface rises gradually towards its center, which thus becomes the highest of the whole.

convolutus, rolled or twisted spirally ; (wings) wrapping around the body, the outer surface being convex. See revolute, involute.

converging, approaching each other towards the tip. See connivent.

copiosus, copious, dense.

copula, *copulation*, the act of uniting sexually.

cordatus, heart-shaped ; also a triangular shape with the corners of the base rounded.

coriaceus, leather-like, thick, tough and somewhat rigid. See *membraneus*. corneus.

coriarius, leather-like, sculptured.

corneus, of horny substance, resembling horn.

corniformis, horn-shaped, long, mucronate or pointed.

cornutus, furnished with a horn.

corona, crown ; a crown-like appearance.

coronatus, having the tip crown-like.

corpus, the body.

corrigatus, wrinkled.

corticinus, bark-like, either in color or sculpture ; e. g. the anterior wings of many insects.

corvinus, crow-black, a deep shining black with a green lustre.

coryphatus,—capillatus.

costa, the thickened anterior margin of a wing between base and apex ; *costal* margin.

costatus, ribbed ; marked with elevated thickened lines with wider intervals between them, than *lineatus*.

costulatus, less prominently ribbed than *costatus*.

coxa, the globular or oblong basal piece of the legs, being entirely or partly hidden in the *acetabula* ; it is *fixa*, immoveable as in Dytiscus or *libera*, moveable, free as in Geotrypes.

cranium or *cava*, skull ; the head with all its parts except the collum, neck.

crateriform, somewhat like calathiform, but not so much inflated and rather approaching infundibuliform. See urceolate.

crispatus = *plicatus.*

cristatus, with a prominent longitudinal carina on its upper surface. See carina.

croceus, saffron-colored, yellow with red=aurantiacus.

cruciatus, having the shape of a cross.

cruciato-complicatus, cross-wise folded, (wings) incumbent, but the inner margins lay one over the other.

crustacius, somewhat hard, elastic, resisting the pressure of the finger; a rigid calcareous substance.

crypto. hidden, concealed. See *Pseudo.*

crystallinus, transparent like crystal.

cubitus, the second nervure of the exterior margin of the wing, extending from the base to the carpus.

cucullatus, capuch-shaped.

cucurbitaceus, melon-shaped.

culmen, the longitudinal carina of a caterpillar.

cultratus, *cultriformis*, knife-shaped, long, broadly flattened and sharp on one side, shaped like a pruning knife.

cumulatus, in heaps, in groups.

cuneatus *cuneiformis*, wedge-shaped, broad and truncate at one end, and attenuated at the other, as the palpi in Cychrus, Carabus.

cupreus, copper-colored, the metallic red of pure, shining copper.

curvatus, curved.

cuspidatus, prickly pointed, ending in a sharp point, an acuminated point ending in a bristle. See *mucronatus.*

cuspis, a pointed process at the margin of the wings.

custoditus, guarded, a body in an envelop, e. g., Chrysalis custodita.

cyathiformis, wineglass-shaped, more or less obconical and concave. See *calathiform*, *acetabuliform.*

cyaneus, pure dark blue, Prussian or Indigo blue.

cylindricus, a round body, equally thick throughout. See *columnaris*, *attenuatus.*

cymbiformis, boat-shaped; *navicular.*

cyatotheca, the cover of the thorax in pupa. See cephaloteca.

D.

Dactylus, finger; toe. =*digitut.*

deciduus, falling off easily. = *caducus.*

declinatus, *declined*, a part somewhat bent with apex downward.

declivius. steep precipitous.

decrepitans, crackling.

decumbens, bending down; upright at base and bending down at tip; (of hairs) closely, lying to the surface. See *procumbens.*

decurrent, closely attached to and running down another body.

decurved, bowed downward. See *excurved.*

decussatus, cross-like, a marking with lines that cross each other, but not at right angles ; in cross-pairs; pairs alternately crossing each other.

deflexus, bent downwards. See *reflexus.*

dehiscens, gaping ; open or standing open, separated at the tips.

deltoideus, spear-shaped ; trowel-shaped.

dendroid, shrub-like ; having the appearance of a little tree.

densus, *dense*, thickly crowded.

dentatus, toothed, with one acute tooth of equal sides, and the tip opposite the middle of the base ; *bidentatus*, with two such teeth; *multidentatus*, with many teeth. See *serratus*, *crenatus.*

dentato-serratus, the teeth-like forms being themselves serrated at their edges.

dentato-sinuatus, toothed and indented.

denticulatus, set with little teeth or notches.

denudatus, naked ; destitute of covering ; (wings) without scales or hair.

deorsum, downwards.

dependent, hanging down.

deplanatus=complanatus.

depressus, pressed downwards ; more or less flattened vertically ; the perpendicular diameter much shorter than the horizontal. See *compressus.*

desectus=*truncatus.*

destitatus, wanting ; being without.

determinatus, (a marking) with well defined outlines.

detonans, exploding ; emitting a sudden noise.

detritus, rubbed off ; a surface partly denudate.

diaphanus, semitransparent ; clear. See pellucidus.

dichotomus, forked ; dividing by pairs.

didactylus, with two toes ; (an insect) having two equally long tarsi.

didymus, double ; geminate.

difformis, (a marking, sculpture) irregular in form ; which can not be compared with a known form ; anomalous.

diffractus, bending in different directions ; separated into parts

diffuse, spreading ; not distinctly circumscribed.

digitatus, finger-like ; divided like fingers nearly to the base ; =fissus.

digitus, the terminal joints of the *tarsus* and *manus* divided into *unguis* and *pulvillus.* See *dactylus.*

dilatatus, (margin) when the sharp marginal edge extends beyond its usual limit ; (base) distended, when the transverse diameter is much longer at one particular part.

dilute, (of colors) pale.

dimeri, two jointed legs ; with two tarsi.

dimidiatus, halved ; extending half way ; half round ; (elytra) covering but half the *tergum.*

dimidius, of half length.

dioptrate, applied to an ocellate spot, of which the pupil is divided by a transverse line.

diptera, having two wings; the order of flies.

discolor, when the same part is differently colored e. g. legs red with tibiæ pale and femora black. See concolor.

discretus, distinctly separated.

discus, *disk*, the surface within the margin; the middle of a surface.

disjunctus, separated, standing apart.

dislocated, applied to designate a stria or line interrupted in its continuity, but in which the tips of the interrupted parts are not in a right line with each other.

dispersus, = adspersus.

distans, standing considerably apart. See *remotus*.

dissiliens, bursting open elastically.

distychus, bipartite.

distinctus, distinct; (antennæ) not united at base.

divaricatus, stradling; spreading apart; (wings) incumbent but diverging behind.

divergens (—ing), spreading out widely, so as to form nearly a right angle.

diversus, unequal; two parts or markings differing in size or shape.

dolabriform, hatchet-shaped; compressed with a very prominent dilated keel and cylindrical base. See securiform.

dorsale, relating to the back; also the upper surface of the larvæ.

dorsulum, (after Kirby) the upper part of the mesonotum between collare and scutellum, with the pteropega.

dorsum, the upper surface of the abdomen.

duplicatus, doubled.

duplo, twice; *duplo major*, twice as large.

E.

E or *ex*, before a latin word means usually without.

ecalcaratus, without a spur.

echinatus, set with long prickles. See *muricate*.

edentulus, without teeth.

edge of a surface is that line which includes the margin, forming the extreme boundary; the elytra of many coleoptera have deflected margins beneath the edge called epipleura.

eflected, bent outwards somewhat angularly.

egg, the first state of the insect.

elasticus, elastic, a part that has a degree of flexibility throughout. See flexilis.

elatus, a part *elevated* above the surface.

eleuthera, (Fab.) maxillæ free, not connate.

elevatus, is a part higher than its surroundings.

elingulata, (Retzius) maxillæ connate with labium = synista, Fab.

ellipticus, elongate oval, having the lines nearly parallel in the middle, and its greatest transverse diameter passes through the center of the longitudinal. See oval.

elongatus, more stretched than usual.

elutus, with scarcely distinct markings.

elytra, anterior wings of coleoptera, covering the wings, dorsum and tergum in repose; they include *basis* (near the thorax), *apex* (tip), *humerus* (shoulder), *sutura* (inner margin and *epipleura*). See edge.

emarginatus, notched; terminating in an acute notch at tip. See *sinuatus*.

embolyum, the button-like lump of the elytra at the insertion = *Callus axillaris* or *angularis*.

empodium, the bifid pseudotarsus between the tarsi of Lucanus, Trogosita etc. See Pseudonychia.

enervis, without nervures (wings).

engraved. See *exsculpatus*.

entire, a plain, flat, straight or curved margin, not indented at the edge.

entoloma, inner margin of the wings.

entomolin. See chitin.

epicranium, *calva*, the upper part of the head, from the front to the neck. scull-cap.

epilobe (of mentum), the more or less distinct appendages of the mentum: which borders the inner margin of the lateral lobes, and which are separated by a distinct suture.

epimera, very narrow or sometimes triangular pieces at the sides of the under surface of the thorax, most frequently a mere prolongation of the

episterna, larger pieces situated just in front of the epimera.

epiplura, the deflexed or inflexed margin of the elytra, immediately beneath the edge.

epistomis, (Latr.) lower face between mouth and eyes. = Hypostoma. See clypeus.

epupillatus, an ocellate spot included by a colored ring, but destitute of a pupil or central dot

equal, *æquale*, surface not striated, nor punctured; body of same length: having equal diameters. See *plane*,

equitans, folded one upon the other; laminated.

erectus, upright; nearly but not obsolutely perpendicular.

erosus, *eroded*, gnawed; as if worm eaten; (edge) with irregular teeth and emarginations.

eruca, caterpillar; larva of Lepidoptera.

erythrinus, *ruber*, brick-stone red, carmine red.

escutcheon, the scutel.

essential character, a peculiar trait, distinguishing the genus or species from all others.

eus, affixed to a word means the presence of the quality or thing, while aceus means only similar; e. g. memberanous, skinny; membranaceus like skin, similar to.

evanescens, disappearing e. g. carina versus apicem evanescens, the elevation disappearing towards the tip.

evidenter, distinctly.

exaratus, sulcated ; several longitudinal furrows with perpendicular margins and wide, elevated intervals, running parallel to each other

exarticulatus, having no distinct joints.

exasperatus, rough, with many irregular elevations.

excaudatus, *ecaudate*, when wings have no tail-like processes.

excavatus, having a depression, the section of which is not the segment of a circle.

excisus, with a deep cut or excision.

excurved, curved outwards.

exoloma, apical margin of wings.

expansus, *expanded* ; (of wings) stretched out in repose, (of a surface) broadly dilated.

exsculptus, (surface) with many irregular, longitudinal depressions.

exscutellatus, having no scutel.

exsertus, protruded, not concealed, opposed to enclosed ; projecting. See *liber*.

extensus, extended, same as expansus.

exterior edge or *anterior edge*, of the wings, expands from the base to the apex.

exterior margin, (wings) is the *anterior margin* from the base to the apex.

exterior palpi, the maxillary palpi.

extremitas, extremity, the end or tip of a part.

extrorsum, *extus*, towards the outside.

exuvia, the cast-off skin ; the rejected covering. See *vernantia*.

eyes, organs of sight, composed of very numerous hexagonal lenses.

F.

Facies, *face*, the anterior portion of the head above the mouth, including clypeus, frons, stemmata, eyes and nasus.

falcatus, shaped like a sickle, convexly curved before and concavely behind.

familia, a division of an order in which several genera are united, having some characters in common by which they are distinguished from others ; as family of Cicindelidæ, Papilionidæ.

farinosus, covered with many single flour-like spots. See *pulverulentus*, *pollinosus*.

farctus, filled, full.

fascia, a transverse band or broad line.

fasciatus, banded, furnished with a fascia.

fasciculus, a bundle of long hair.

fasciculatus, bundled : clustered as in a bundle ; tufted ; covered with dispersed bundles of long hair.

fastigiatus=*emarginatus*.

fatiscent, spontaneously mouldering and falling to pieces in the air.

favosus, honeycomb-like; with large and closely placed deep holes full of fissures.

favus, a cell like that of a honeycomb.

feelers, the palpi, (according to some authors the antennæ.)

feet, organs of locomotion, consisting of apophysis, femur, tibia, manus, tarsus, planta and palma.

femur, pl. femora, the thigh. See feet.

femoratus, furnished with unusually formed femora..

fenestratus, (with windows) with transparent spots.

fere nearly, almost.

ferreus, iron-gray, the metalic gray of polished iron.

ferrugineus, *ferruginosus*, rusty-brown; the color of the oxide of iron: brownish red with some yellow.

festivus, variegated; with several bright colors.

filamentum, thread; a long, thin equally thick process.

filiformis, thread-shaped; slender and of equal thickness (composed of cylindrical joints).

filosus, ending in a thread-like process.

fimbria, fringes; a bundle of thick ciliated hairs at the tip of a part. See *scopa*, *flocculus*.

fimbriatus, fringed with hair of irregular length.

fissilis, cloven; divided into parallel lamellæ (antennæ of some Scarabidæ).

fissus, cloven; divided longitudinally near the base.

fissura, a crevice; a narrow breaking of continuity.

fistular, hollow; applied to a hollow cylinder.

flabellum, a fan; flabel.

flabellatus, (antennæ) fan-shaped: when the joints are very short; but the processes very long and flat and consequently lie close together; *biflabellatus*, when both sides of the antennæ send forth such processes.

flabelliformis, same as flabellatus.

flaccidus, limber; feeble; lax.

flagellum, the part of the antennæ between scapus and capitulum.=(*flabellum*.)

flammeus, red like a flame. See *auroreus*.

flavus, yellow like a lemon or like sulphur; *citrinus*, *sulphureus*.

flavo-virens, green verging upon yellow.

flexilis, *flexibilis*, pliable; possessing elastic properties.

flexuosus, zig zag without acute angles; seems to differ from undulatus in being alternately bent and nearly straight.

fluviatilis, inhabiting rivers.

foliaceus, resembling a leaf; a part consisting of several leaf-like joints.

folliculus, the covering formed to protect the pupa.

foramen, opening at an apex; opening of a cocoon.

forceps, the hooks, by which the ♂ grasps the anus of the ♀.

forcipatus, formed somewhat like a pair of pincers.

fornicatus, arched or vaulted; concave within and convex without.

fortiter, strongly.

fossula, a sinus; a small hollow; foveola and scrobiculus have nearly the same meaning.

fossulæ, the hollows at the sides of the head to conceal the antennæ. in Elateridæ, Curculionidæ.

fossulatus. (surface) with oblong impressions.

fovea, a small round impression.

foveolatus, covered with deep impressions, which become narrower towards their bottom.

fractus, broken (of antennæ).

fragile, brittle; easily broken.

frons. anterior portion of the head, included by the eyes, vertex and nasus.

fulgidus, shining.

fuliginosus, sooty; color of soot; (nut-brown); dark brown with a little red.

fulvus, light brown, with much yellow.

fumatus, smoky-gray, like the color of smoke. (inclining to brown.)

funiculatus, whip-like; a part, long, slender and composed of many flexible joints.

funiculus=*flagellum*.

furca, fork.

furcatus, forked; terminating in two divisions.

fuscus. dark brown, a plain mixture of black and red.

fusciformis, spindle-shaped, cylindric or columnar gradually tapering more or less to each end.

G.

Galea, helmet, a dilated unarticulate, membranaceous piece on each maxilla. in Orthoptera.

galeotheca, the cover of the above in the pupa state.

gastricus. belonging to the belly.

gastrotheca. the cover of the abdomen in pupæ=somatotheca.

gelatinosus. jelly-like; having the consistence of jelly.

geminatus, *geminus*. situated in pairs.

gemmatus, adorned; decorated with golden or bright colored spots on the wings.

gena, cheek; a portion of the head on each side immediatly beneath the eyes.

geniculatus, knee-jointed; bending abruptly in an obtuse angle. See *fractus*.

genu, knee; joint between femur and tibia.

geniculum, little knee.

genus, an assemblage of species, which correspond in particular characters, but differ in less essential. Therefore every species must have the generic characters.

geometridæ, (larvæ) which when walking alternately elevate and straighten the middle of their body: e. g. those of the genus Geometra; opposed to *rectigrade*.

gibbosus, humpbacked, protuberant ; a surface with several elevations.

gibbus, when the whole surface forms a humpback, like an obtuse cone.

ginglymus, an articulate joint.

glaber, smooth ; not hairy.

glaucus, whitish blue ; inclining to gray.

globosus, *globulosus*, like a round ball, having all its diameters equal.

glochis, a barbed point.

glomeratus, congregated.

glossa, tongue=lingua spiralis, a form of the sucking mouth parts in Lepidoptera, in which only the labial palpi and maxillæ (sucking tube) are well developed.

glossatus, furnished with such a tongue.

glossotheca, covering of glossa in pupæ,

glossarium, the middle spine on the haustellum of Diptera.

glutinosus, slimy, viscid.

gracile, slender.

gradatim, by degrees.

gramineus, green like grass.

granulatus, covered with small (grains) roundish elevations-

gregarius, living in a society ; as many caterpillars ; Lytta, etc.

gressorius, fit to walk ; (strong legs with broad tarsi ;) much stronger than cursorii.

griseus, light gray ; (white and black).

grub. the larva ; generally applied to the immature scarabæid.

gula, (throat) concave portion beneath the head, between the opening of the mouth and the beginning of the neck=jugulum (Kirby.)

gutta, a drop ; a light spot upon a darker ground.

guttatus, spotted. See gutta.

gymnoptera, membranaceous and transparent wings without scales.

H.

Habena, sometimes used to designate a fascia on the thorax.

habitus, habit ; the port or aspect ; used comparatively to express a resemblance in general appearance apart from more important markings derived from organization.

habitatio, habitat ; a situation or locality frequented by insects.

halteres, the poisers, capitate moveable filaments, (like drum sticks) substituted for the inferior wings in diptera..

hamus, a hooked process, covered with scales, situated under the upper wings near the base, in the males of the many lepidoptera, receiving a bristle from the lower wings, (See *tendo.*) the hamus is never present in females.

hamuli, small hooks on the anterior margin of the under wing in Hymenoptera.

hamatus, bent like a hook.

hastatus, halberd shaped; a part terminating by a big thorn.

haustellum, the sucker; (diptera) it is formed by the assemblage of inflexible setæ and enclosed in a rostellum or proboscis. See ligula.

head, the anterior portion of the body connected at base with the thorax; it includes occiput cranium (calva,) clypeus, frons, vertex, gena, mouth and gula.

helvus, honey-yellow; dark yellow with some red, very similar to croceus.

hemi, *hemos*, (prefix from the greek.) half.

hemielytra, *hemiptera*, half wing, coriaceus at base and membranaceous at tip; bugs.

hepaticolor, liver-brown, dark brown with some gray-green.

hermaphroditus, (Hermes=Mercur, a god and Aphrodite=Venus, a goddess) an insect one half of which is male, the other half female, best seen on wings and antennæ.

heterocera, (lepidoptera) having the antennæ differently shaped in ♂ and ♀ (Bombyx, noctua) opposite to *Rhopalocera*.

heteros, (greek) unequal.

heterogenus, different, aberant, abnormal.

heteromeri, (legs) with an unequal number of tarsi, the anterior pair with five tarsi, the posterior pairs with only four tarsi.

heteronomous, unequal; if two parts compared with each other, are of different quality e. g. alæ heteronomæ of coleoptera. (elytra and wings.)

heteropalpi, different number of palpal joints in ♂ and ♀ e. g. in Phryganidæ.

hexagonum, a form with six equal sides, meeting in six equal angles.

hexapoda, having six feet, as in all true insects.

hians, gaping.

hirsutus, *hirtus*, densely clothed with short strong stiff hairs.

hispidus, rough; sparsely clothed with stiff short hairs.

hoary, covered with a fine white silvery substance or pubescence. See pruninosus.

holosericeus, with silken hairs; when short shining hairs lie closely to the surface resembling silk or satin.

homos, (greek) equal.

homelytra, elytra of equal substance like those of lepidoptera.

homoeomeri, (legs) with an equal number of tarsi.

homoeonomus, of the same substance.

homotene, retaining the primitive form, (not changing the form by moulting)

homogenous, of the same kind or nature.

horizontal, parallel to the horizon.

horns, a word used by some writers to designate the antennæ.

humeralis, (wing or elytron.) with angulated projecting margin at the base.

humerus, the region of the exterior basal angle of the elytra.

hyacinthinus, dark red with yellow-brown.

hyalinus, transparent, vitreous.

hybrida, bastards, the offspring of two different species (of one genus) usually not productive.

hydro, a prefix, means belonging to the water.

hymenoptera, an Order of Insects with four membranaceous marked wings and a perfect metamorphosis as bees, wasps, ants.

hypocrateriform, salver-shaped.

hypographus, shaded; (a fascia) becoming gradually darker.

hypopygium, (Kirby) anus.

hypostoma, (in diptera) the portion between antennae, eyes and mouth; clypeus, =nasus, Kirby, =epistomis, Latr.

I.

Ichenumonidae, a family of the hymenoptera, (wasp).

icius, (affix) means similar to.

ignitus, red like fire.

imago, the perfect insect after having passed through the states of larva and pupa.

imbricatus, lapping over, like the shingles of a roof.

immaculatus, without spots,

immarginatus, without elevated margin or rim.

immersus, inserted or hidden.

impressus, (a surface) having an impression.

impubis, without hairs. See pubescent.

inæqualis, unequal.

incanus=canus, hoary.

incisura, *incision*, an impressed transverse line, separating the abdominal segments.

inclinatus, *inclining*, leaning.

inclusus, (a part) hidden partly or entirely in another.

inconspicuus, not readily discernible. See obsolete.

incrassatus, thickened; swelled out at some particular part.

inauratus =auratus, golden-yellow.

incunabulum, =folliculus.

incumbent, resting against, one lying over the other; [wings] which when the insect is at rest cover the back of the abdomen horizontally.

incurved, bowed inwards. [See recurved, bowed backwards.]

indeterminatus, of no constant form, irregular.

indumentum, cover [hairs, scales, tuft.]

indurated, hardened.

inermis,, unarmed, [without spines] See muticus.

inferior wings, those farthest from the head;=posterior wings or secondaries.

inflatus, blown up; see bullatus, tumidus.

inflexus, [inflected] bent inwards at an angle.

infra, *inferus*, *inferior*, beneath, [speaking of the ventral parts of the body.]

infracted, bent inwards abruptly, as if broken.

infundibuliformis, funnel shaped [as tarsi, antennæ]

infuscatus, smoky, gray-brown.

inner or *interior*, margin (of wings), that margin which extends from the base to the posterior angle.

innotatus, without markings.

insertus, [a part] sticking with its base in another part.
instar, =equal; oculi instar, like an eye.
institia, a stria of equal breadth throughout.
instrumenta cibaria, the trophi. the mouth-parts.
integer, whole entire; [a margin] without incisions.
interior or *inner edge*, the boundary of the inner margin,
interior palpi, =labial palpi.
interrupted, broken, not continuous, but the tips of the broken parts are in a right line with each other. See dislocated.
interstitium, (interstice,) space between the striae or punctures on elytra of Coleopt.
intorted, turned or twisted inwards.
intricatus, without any regularity; confused.
introrsum, directed inwards; towards the body.
intrusus, seemingly impressed by a sharp point.
invertebrata, animals destitute of the vertebral column.
investitus, not clothed; [a surface] without hair or scales.
involutus, rolled inwards spirally.
iris, the circle surrounding the centre spot of an ocellate wing.
iridicolor, reflecting the prismatic hue.
irrorate, marked with minute points; dew-like.
isabellinus, pale yellow, with some red and brown.
ischia, =pleurae.
iso, [prefix] means equal.
itus, (affix) means possessing; auritus, with ears.
ius, (affix) means fit to; fossorius, fit to dig.
iusculus, (affix) means less; planiusculus, less flat.
jubatus, fringed with long pendent hairs.
jugulum, after Kirby throat, see gula.
junctura, the junction of subcosta and radius near the margin of the wing in hymenoptera.

K.

Keel, see carina.
kermesinus, dark red with much blue.

L.

Labellum, prolongation of the labrum, covering the base of the rostrum, see promuscis.
labis, the slender abdominal forceps in many Lepidoptera.
labial palpi, the small articulated appendages of the labium; the interior or anterior palpi.

labiated, having lips.

labium, lower lip, composed of the mentum and ligula or tongue; it supports the labial palpi.

labrum, upper lip; it is generally moveable, and applied to or placed immediately beneath the nasus, and above the mandibles; it is sometimes entirely concealed; it is the labium of some authors.

lacerated, ragged, torn; (margin) with broad and deep incisions.

laciniæ, differently shaped valves or lobes in insects with bifid labrum and maxillae.

laciniæ exteriores, (in Aphidae) two elongated flattened or concave biarticulate valves, situated on the tongue and near their tip, supporting the labial palpi; from which they are distinguished by being flat instead of cylindrical.

laciniæ inteiores, (in Aphidae) two inarticulate membranaceous valves, which embrace the tongue at its entrance into the tube.

laciniated, jagged; cut into irregular segments.

lactescent, yielding or secreting a milky fluid.

lacteus, shining white with a bluish tint like milk.

lacunæ, irregular impressions or cavities.

lacunosus, pitted; having the surface covered with small cavities. See favosus.

læte, bright.

lævigatus, (surface) smooth, somewhat shining.

lævis, (surface) smooth; without impressions or elevations.

lamella, a thin plate or foliation.

lamellatus, (antennae) divided into distinct plates or foliations. See fissile, setaceus.

lamina, a callous plate.

laminatus, flattened.

lana, wool; the woolly hair at the abdomen of some Lepidoptera.

lanatus, woolly; covered with dense, fine, long, white hairs, so distinct that they may be separated. See tomentosus.

lanceolatus, lance or spear shaped; oblong and tapering to the end.

lanuginosus, with longish curled hair dispersed over the surface. See crinitus.

lanugo, slender single hairs.

larva, (a mask) the state of an insect, next following to the egg-state; maggot, grub, caterpillar; it is slow, sterile and voracious; the old authors called it eruca.

larvina, maggot without separated head and without legs.

lasureus, dark blue; Dutch blue.

lateral, situated on the side.

lateritius, *latericeous*, yellow red; color of yellowish bricks.

latticed, cancellated.

legnum, the margin of a squamma.

lenticular, lentil shaped; spherically convex on both sides, a double depressed convex figure.

lepidoptera, an order of insects with four wings that are covered by minute imbricated scales; as butterflies and moths.

lepos, the surface of a scale.

leprous, with loose irregular scales.

libellulidæ, a tribe of the neuroptera. [darning needle.]

liber, free; (a part) fully visible, nowhere covered by another part.

ligneus, brown like wood; hard, unelastic like wood.

ligula, tongue; the superior portion of the labium, situated beneath the maxillae, generally of soft texture, often bifid. See lingua, haustellum, proboscis, and tubus.

ligulatus, tongue-shaped; strap-shaped.

lilacinous, lilac color; like violaceus, but duller, tinged with red.

limbus, *limb*, the circumference.

limpidus, perfectly transparent; as alae limpidae of flies.

line, the twelfth part of an inch; a thread-like slender coloration.

linear, (a surface or body) with parallel sides and nearly of uniform breadth.

lineated, lined; streaked; marked with fine lines.

lingua, tongue; the elongated maxillae in Lepidoptera; the central organ of the proboscis in Hymenoptera=labium. Fab,=inferior lip; Deg.

linguiform, tongue-shaped; linear with the extremities obtusely rounded.

literate, ornamented with characters like letters.

litura, an indistinct spot, paler at its margin.

livid, dark grey or pale yellow, verging towards violet.

lobatus, tattered; divided by deep undulating and successive incisions.

lobus, appendage of the maxillae, outer lobe and inner lobe, of different forms.

longitudinal, the direction of the longest diameter; situated longitudinally with respect to the body.

lora, rein; small corneous cords upon which the proboscis is seated; the anterior part of the genae near the mandibles and maxillae.

lubricus, covered with slippery mucous.

lucidus, reflecting with brilliancy; also applied to insects shining by night as Lampyris etc. See nitidus.

luciferus, giving light.

lunaris, *lunatus*, crescent-shaped; formed like a new moon.

lunula, a half-moon shaped spot of different colors.

luridus, dirty brown; brownish blue,

luteus, unmixed yellow; color of clay.

lutosus, apparently or absolutely covered with dirt.

lyratus, lyre shaped; cut into several transverse segments and gradually enlarging towards the extremity.

M.

Macula, a spot larger than a puncture, of an indeterminate figure, and of a different color from the general surface.

maculatus, spotted; marked with spots; also *maculosus*.

magis, more.

mala, lobe; *mala maxillæ*, that part of the maxillae which is placed upon the stipes, usually bipartite; sometimes the exterior lobe is formed like a two-articulated palpus, as in Cicindela, Carabus and Dytiscus; sometimes there is but one lobe as in Melolontha, Copris, Aphodius; in Cicindela is at the tip of the lobe a movable tooth; this exterior lobe covers in Orthoptera the [illegible]ernal lobe, and is called helmet, galea.

marginated, surrounded by an elevated or attenuated margin, (margin bent upwards.)

marmoratus, (a marking) the spots and lines running irregularly as in marble.

maxillæ, jaws, (under jaws); one on each side of the mouth immediately beneath the mandibles, moving transversely; usually corneous at base, and membranaceous or coriaceous at tip and furnished with one or two palpi; they consist of four parts: 1. *cardo*, the hinge or basal part, small, thin and transverse; 2. *stipes*, thicker, stronger and larger, at base membraneous, at apex corneous; 3. *squamma palpifera*, a plate forming the cover of the stipes and supporting the palpi; 4. *lobus maxillæ*, see mala maxillæ.

maxillary palpi, or exterior palpi, articulated movable filaments near the middle of the dorsal edge of the maxillæ; in some coleoptera there are two pairs, and are distinguished into internal and external, the former is biarticulate and incumbent on the back of the maxillæ. See mala maxillæ.

maxime, very much, very large.

medi, (prefix) middle.

members, (artus) the exterior organs of locomotion taken collectively, as well as the appendices of the trunk and abdomen.

manicatus, fur-like; (surface) densely clothed with irregular depressed hair.

manus, the hand, the articulated termination of the anterior feet; the anterior tarsus including palma.

marcescent, shrivelling.

margaritaceus, shining like mother-shell.

margin, that portion of a surface which is within the edge, bounded on the inner side by the submargin, and consisting of a more or less dilated imaginary line.

marginal cellules, the radial cellules.

membrana, (in hemiptera) the membranaceous part of the upper wings.

membranaceus, skin-like; thin like skin, and semitransparent like parchment; of a thin pliable texture.

membraneus, skinny; e. g. those parts connecting corneous parts.

meniscoidal, somewhat globular, with one side concave.

mentum, the chin, the lowest piece of the mouth arrising at the gula, supporting the ligula or tongue, and sometimes covering it in front.

mesomeros, (in lepidoptera) the middle part of the abdomen (2d to 5th segment)

mesonotum, the corneous covering of the mesothorax.

mesosternum, directly opposite to the mesonotum, upon the under side of the mesothorax, to it the middle legs are attached.

mesothorax, the middle part of the thorax, bearing the anterior wings; and together with the metathorax the middle legs. (in Coleopt.)

metabola, (Insects) with perfect metamorphosis, showing dissimilarity in its several stages of existence, as larva, pupa, imago.

metameros, (in Lepidoptera) the 6th, 7th and 8th abdominal segments.

metamorphosis, an alteration in the appearance of an insect, owing to the development of parts previously concealed, by a sudden vernantia; the transformation from the imperfect or larva state to the perfect insect; it is imperfect, semicomplete or coarctate.

metanotum, the tergal covering of the metathorax.

metasternum, the under side of metathorax to which the hind legs are attached.

metatarsus, heel, first tarsal joint, when greatly differing from the other joints in breadth and length, (as in some Hymenoptera.)

metathorax, the posterior portion of the thorax on the superior surface it is separated from the thorax and scutel by sutures, and is particularly obvious in the Hymenoptera, in Coleoptera it is closely united with the mesothorax and the abdomen.

micans, shining; (a surface) parts of which are shining only.

miniatus, red; like red-lead.

modioliform, somewhat globular, truncated at both ends like the nave of a wheel.

monarsenous, that kind of polygamy in which one male suffices for many females.

moniliform, (antennæ) beaded like a necklace. See aristate and perfoliate.

monodactyle, armed with a movable nail, which closes on the tip; it differs from *chelate* in having but one process.

monogamous, propagating by the union of one male and one female only.

monomeri, (legs) with but one tarsus.

monophagus, (insects) living on but one plant; not touching others.

monothelious, that kind of polygamy in which a female is fecundated by many males.

mouth, the anterior and terminal part of the head, containing the trophi.

mucoreus, mouldy; (a surfaca) seemingly covered with small fringe.

mucronatus, dagger-shaped, terminating in a sharp point. See cuspidiate.

multangulus, with many angles.

mumia, (after Lamarck) pupa.

munitus, provided with.

muricate, armed with sharp rigid points.

murinus, mouse-color, grey with some yellow.

muscidæ, flies.

muticus, unarmed; when terminal processes are wanting, where they are usually present. See inermis.

mutillatus, mutilated; (a part) not of full size e. g. elytra of Silpha, Hister.

mystacinus, bearded, if there is a hairy fringe above the mouth on the clypeus.

mystax, in some Diptera, is a patch or bristles of hair immediately above the mouth, on the lower part of the hypostoma, below the vibrissæ.

mytiliform, shell-shaped, (middle feet in some aquatic hemiptera.

N.

Naked, (pupa) not folliculated; (surface) glabrous.

nasus, the anterior termination of the face, particularly in Hymenoptera, often separated from the front by a suture, and often elevated, sometimes gibbous; it is very obvious in Vespa and the kindred genera; it has no relation with the organs of smelling; it supports the labrum. See clypeus.

nail, the unquis.

natatorius, (feet) formed for swimming. See cursory, saltatory.

navicularis, boat shaped; with concave disk and elevated margin; cymbiform.

nebulosus, clouded; marked with many scattered, abrupt, dilated lines of various forms.

neck, a contracted posterior termination of the head in some insects.

nervi, nervures, nerves or vein like processes which support the membraneous part of the wings; divided into radial, cubital, brachial and recurrent.

neuroptera, an order of insects, including such as have four finely reticulated wings and no sting, as dragon flies, May flies etc.

niger, pure black.

nigricans, blackish, grey-black.

nitidus, nearly synoymous with lucidus and politus, but is less brilliant.

niveus, snow-like.

Noctuidæ, moths.

nodosus, knotted, a longitudinal body with one or more swollen parts; a sculpture with almost isolated knots.

nodulosus, (a sculpture) with knots connected by an undulating line.

notatus, marked (expressive of color.)

nototheca, the covering of the tergal part of abdominal segments in pupæ.

nucha, (after Linne) the neck, upper part of the tergum, connecting head and thorax.

nudus, nacked, (a surface) without hairs, scales or dust.

nutans, nodding; bent downwards at tip (head, antennae.)

Nympha, the state of development of an insect feeding in the larva and pupa-state, also called sub- or pseud-imago, (Hemiptera). Lamarck calls nymphae all pupae with incomplete metamorphosis.

O.

Ob, prefixed to a word signifies inversely.

obconicus, inversely conic, conic with the vertex pointing downward.

obcordate, inversely heart shaped; heart shaped with the point applied to the base of another object or part.

obesus, unnaturally enlarged and distended as if from disease or too much food.

oblatus, flattened; this term is applied to a spheroid of which the diameter is shortened at two opposite ends.

obliteratus, indistinct.

obliquus, slanting, two lines meeting in an obtuse angle.

oblongus, the transverse diameter much shorter than the longitudinal.

obovatus, inversely egg shaped, the narrow ends downwards or towards the base.

obsitus, (surface) covered with equal bodies, as scales etc.

obsolete, indistinct; inconspicuous, (faded).

obtect, covered, (a part) covered by another part, as labrum obtectum in Melolontha; (pupa) wrapped in a crustaceous covering.

obtuse, blunt; as obtuse dentatus, with blunt teeth.

obtusus, blunt; ending in a segment of a circle.

occiput, the hinder part of the head; the part behind the vertex.

occultus, hidden, as caput occultum in Cassida.

ocellatus, applied to the eye-like spots on the wings of Lepidoptera usually formed of a differently colored iris or ring, inclosing one or more small spots.

ocellus, the eye-like spot, see ocellatus.

ocelli, simple eyes, small lentil shaped eyes; the stemmata; the eyes of coleopterous larvæ.

oculi, the eyes, compound eyes, consisting of numerous hexagonous surfaces, each of which is itself an eye. The number of those lenses is in an ant 50, Sphinx ligustri 1300, housefly 4900, Melolontha 6300, Libellula 12544, Mordella 25088.

ochraceus, yellow with a slight tinge of brown.

olivaceus, of an olive-color, dirty light green.

Omia, lateral margin of the scutellum in Carabidæ and Dytiscidæ, which appear separated; the margin of the anterior stethidium.

Onychium, a small process between the claws; see pulvillus and empodium.

opacus, (surface) without any lustre.

opalinus, (surface) reflecting like opal.

operculum, a lid; a small valvular appendage; the scutes covering the mesothoracic stigma; see peritrema.

ophthalmotheca, the covering of the eyes in pupæ.

oppositus, placed on the side opposite to another, so that the bases of the two are in the same transverse line.

Ora, border, after Kirby the broad lateral margin of the prothorax.

ora coleopterorum, margin of elytra.

orbicular, round and flat, the diameters of the plane being equal.

orbita, an immaginary border around the eye; (the border around the compound eyes.)

order, the sub-division of a class, as Coleoptera etc.

orichalceus, brassy, yellow like brass.

orificium, anal or genital opening.

orismologia, description or terminology of the different parts of insects.

Orthoptera, an order of insects with four membranaceous reticulated wings, as libellula.

os, the mouth of the insects in general.

ostiolum odoriferum or fragrans, the opening at the sides of mesosternum and metanotum in Hemiptera, secreting the smelling fluid.

osus, (affix) expresses fullness or abundant presence of a quality; as squammosus, covered with scales.

ovale, somewhat egg shaped, but the outlines of the ends are equal. See ovate.

ovatum, shaped like the longitudinal section of an egg, the outlines of the ends being unequal.

oviduct, the instrument and appendage with which the females deposit their eggs.

oviposition, the act of depositing eggs; the manner in which eggs are deposited.

oviparus, propagating by means of eggs.

ovoviviparous, producing living young, the eggs being disclosed in the matrix of the parent.

P.

Pagina, the surface of a wing.

pala, shovel-shaped tarsus of many aquatic Hemiptera.

palate, the interior part of the transverse lip.

paleaceous, chaffy.

pallidus, *pallescens*, pale; pallide flavus, pale or whitish yellow.

palma, palm; the basal tarsal joint of the anterior feet, sometimes furnished with stringilis; after Zimmermann broadened tarsus,=tarsus ampliatus. See manus.

palmatus, hand shaped; cut down nearly half way to the base into subequal, oblong segments, leaving an entire space like the palm of the hand; e.g. tibiae palmatae.

palpi, articulated movable filaments in the mouth of insects, generally shorter than the antennae, divided into labial and maxillary palpi.

panduriform, fiddle shaped; oblong, broad at the two extremities, and contracted in the middle.

papilionaceous, butterfly-like.

papilla, the spinning wart, the wart-like elevations between the legs of the larvae of Bombycidae near the mouth.

papillary, having the apex semitubular, somewhat like the nipple; this term ought to be distinguished from verrucosus.

papillosus, pimpled; having the surface covered with raised dots or pimples. see verrucosus.

pappus, down.

paraglossa, the membraneous parts of the ligula, often projecting at the basal angles as ciliate lobes.

parallelogram, a quadrilateral, right lined figure, whose opposite sides are parallel and equal to each other.

parapleura, that segment of the postpectus, which is situated one on each side of the acetabulum, behind the scapula; in some genera are two on each side; they may then be distinguished into anterior and posterior.

parasitical, inhabiting another animal.

parce, *parum*, scarcely, e. g. parce pilosus, scarcely hairy.

parietes, walls; perpendicular sides of the honey comb; sides of elevated bodies.

Partitus, divided; (eyes.) divided by a corneous or membranaceous process into right and left halves, or anterior and posterior halves as in Gyrinus, Geotrypes.

patella, disk, the structure of the anterior tarsi in the male of Dytiscus.

patellulæ, the unequal cup-like impressions on the underside of the patella.

patulous, (*patens*,) open; spreading.

pecten, in Hymenoptera, rigid, incurved setae which arm the exterior margin of the upper part of the base of the valvulae or maxillae.

pectinatus, comb-shaped; cut into regular straight segments like the teeth of a comb; see perfoliatus, setaceus.

bi-pectinatus, on both sides, comb-shaped.

pectoralis, (thoracic) belonging or affixed to the underside of the thorax.

pectus, the anterior, inferior portion of the trunk, included between the head and postpectus.

pedes, the feet; this term is applied to the whole limb consisting of the femur, tibia, and tarsus.

pedicellus, *pedicle*, the third joint of the antennae, particularly in Hymenoptera, often forming the pivot, turning in the socket of the scapus, upon which the other articulations, constituting the apex, sit, and by means of which they often form an angle with that part; it is " le bouton" of Reaumur.

pedunculus, peduncle, a stalk or petiole.

pedunculatus, elevated on a stalk or peduncle; see petiolatus.

pellucidus, colored but transparent; see hyalinus.

peltatus, target-shaped,

pendent, *pendulus*, hanging down (pupae of Rhopalocera.)

penicillatus, with long flexible hair-bushes placed on a thin stalk, as on tibiae.

penicilliform, pencil shaped.

penis, the genitals of the male, consisting of forceps and phallus.

pennaceous, *pennatus*, feathered like the web of a quill. See plumosus.

Pentagonum, a surface bordered by five sides meeting in five angles, one of which looks upwards.

Pentameri, legs with five tarsal joints.

penultimate, the last but one.

perennial, continuing for several years.

perfoliate, preforated; applied to those antennae of which the joints are transversely divided into thin plates, which are connected by a common stalk passing nearly through their centres. See clavate, pectinate.

pergameneous, a thin long transparent substance somewhat resembling parchment.

peripheria, the entire outline of a body.

periphericus, (parts) standing at the outline of a body.

peristethium, that segment of the prostpectus anterior to the insertion of the intermediate feet; it extends laterally to the scapulae, and is generally connected with the pectus by a membrane.

Peritrema, the corneous surrounding at the opening of the stigmata.

perpendicular, opposite to horizontal, meeting a horizontal line in a right angle.

persistent, permanent.

persicinus, dark rose-red; like the red of the blossoms of peaches.

personatus, gaping; palpi personati, masked palpi, bent upwards and covering the face; e. g. in Prosoponia.

petiolatus, supported on a stem; (cellule) one of the cubital cellules is said to be petiolated when it is triangular, and connected by means of a nervure with the nervure of the radial cellule; this disposition more frequently occurs in the second cellule.

petiolus, a stem; the support which connects the base of the metathorax with the base of the abdomen.

Phalaenæ, Linne's Noctuidæ etc. phalerated, marked with stripes and bands, like the harness of a horse.

phallus, the masculine organ of generation.

Phasmidæ, a family of Orthoptera, as walking sticks etc.

phosphorescent, lucid: emitting light in the dark.

Phryganidæ, a family of Neuroptera, the larvae live in tube-like cases in water.

piceus, pitchy; the color of pitch.

pieza, (Fabr.) compressed maxilla with long ligula: biting and sucking mouth, in Hymenoptera.

pilosus, *pilifer*, *piligerus*, having long sparse hairs. See hirsutus, crinitus.

pinnatifid, with winged clefts.

Pinnatus, when stiff hairs or thorny processes occupy the side or sides of a thin shank.

pistazinus, green with yellow or brown.

plaga, =area.

plane, a level or rectilinear surface, destitute of elevations or depressions: a curved surface cannot be plane because it is not rectilinear. See equal.

planta, the basal joint of the tarsus of the posterior pairs of feet in Hymenoptera, often elongated or dilated, containing scapula. See palma. Also used for the underside of the last tarsi in other insects.

pleura, the side of the stethidium, between the thorax and pectus, (in coleoptera covered by the elytra.)

Plica, a fold on the body of caterpillars, or on the wings of insects.

plicatus, plaited; folded like a fan, (wings of Orthoptera).

plumatus, *plumosus*, feathered; with fine hairs on each side so as to resemble a feather. See pennaceus.

plumbeus, pale, blue grey, like lead.

podotheca, covering of the legs in pupae.

poisers, the halteres in the Diptera, a capitate movable filament on each side, substituted for the inferior wings.

politus, polished, shining smooth.

pollex, thumb, the strong immovable thorn at the inside of the tip of tibiæ.

pollicatus, (a part) with an immovable blunt thorn at the sides.

polliniferus; formed for collecting the pollen of plants as in many of the Hymenoptera.

pollinosus, covered with yellow dust, as some Lixus.

polymorphous, undergoing metamorphoses; applied to those articulated animals with feet that undergo a metamorphose, either partial or total. See homotene.

polyphagous, eating a variety of food,

pone, behind; pone medium, behind the middle.

porcatus, marked with raised longitudinal lines, and broad intervals.

porosus, with little holes on the surface.

porrectus, streched out; prominent; elongated forwards, as head in Carabidae.

post, (prefix) behind.

posterior angle, of the wing, is the junction of the posterior edge with the interior edge; of the thorax, is the lateral angle near the base of the elytra.

posterior edge, the boundary of the posterior margin.

posterior margin, of the wing, extends on the hind part of the wings from the apex to the posterior angle. See inner margin.

posterior wings, the inferior wings.

BULLETIN

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SOCIETY.

VOLUME III.

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BULLETIN

—OF THE—

Brooklyn Entomological Society.

VOL. III. BROOKLYN, MAY, 1880. No. 1.

A WORD TO OUR READERS.

We herewith send you the first number of Vol. III of the Bulletin. Among entomological journals we can recommend it on the following grounds:

1. It is designed to be a depository of practical hints to collectors of Coleoptera and Lepidoptera, and it will in time become a complete handbook of information upon this subject.

2. It furnishes synoptic tables of the Coleoptera and Lepidoptera of the United States up to the date of publication. These are carefully prepared by members of the Society, and are revised by our leading authorities, Dr. Leconte, Dr. Horn, and Wm. H. Edwards. Every collector has check-lists and catalogues, but every one has felt the need of a complete descriptive synopsis such as will here be given. Some synoptic tables have been published in the past, but they are fragmentary, scattered, or out of date. The ordinary collector can not get them, or they do not serve his purpose.

3. It furnishes an alphabetical list of scientific terms, such as are used in technical descriptions in entomology, with their definitions. This was begun with the second volume, and will be completed with the present year. It is printed so it can be bound by itself, and is worth more than the subscription price of the Bulletin.

4. It furnishes these very cheaply, viz., $1 per annum.

5. The Bulletin is not the organ of any individual person or hobby. It aims for common sense, simplicity, and certainty in entomology.

6. The BULLETIN is intended to be, and has the assurance of being, a permanent publication. We have the means to run it apart from subscriptions; yet, while saying this, a large subscription-list would enable us to do more than in the past in the giving of the synoptic tables by adding more pages to each number. In view of the above, we respectfully ask you to give us your encouragement and aid in our effort, by subscribing for the BULLETIN.

There has been some irregularity in the publication of the second volume of the BULLETIN, but the fault lay entirely with our printer. We dealt with him tenderly, because he had made a considerable outlay of money for type, etc., which he would not have needed but that he might print the BULLETIN; but our kind efforts have been entirely lost to the end for which they were given. We have now changed the printer, and the third volume will appear regularly.

The price of subscription is $1 per annum, from May, 1880, till April, 1881. There are some copies of Vols. I and II left, which are for sale at $1 each.

Money should, if possible, be sent by P. O. order, payable to BROOKLYN ENTOMOLOGICAL SOCIETY, at *Brooklyn, E. D.*, N. Y.; not Brooklyn, N. Y.

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Publication Committee.

Remarks upon the Genus CATOCALA, with a Catalogue of Species and accompanying Notes.*

BY GEORGE D. HULST.

PART I.—Remarks.

IT is probable that no single genus of all the local Lepidoptera attaches to itself so much of interest as Catocala. The size, beauty, and variety of the species have always commanded attention, and made it a favorite among collectors.

The bulk of the work on the genus in the past has been done by Messrs. Strecker, Grote, the two Edwardses, Guenee, and Walker. Species have been named, descriptions collated, lists made, and by Mr. Strecker excellent colored representations of species given.

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* Read before the Society May 1, 1880.

It is likely that, hereafter, very few new species will be found north of Mexico. The east and north have been thoroughly explored; and Florida, Colorado, Texas, and the Pacific coast have, during the last three or four years, been very extensively collected over both by amateurs and professionals.

Very large amounts of material have thus been gathered from all parts of the country, and very large opportunity is given to ascertain, by comparison, what forms are varietal or specific, and what are the limitations, distant or near, of each.

Final determination can not be made, till much more is known than at present, especially of larval history. We are not aware that the history of a single American Catocala has been fully written. We know the mature form of the larvæ of a few, but nothing is known of their history, except that the larvæ, in part at least, hibernate.

It is possible, however, that the knowledge of the larval history may not be of much help to us in determination; for the larvæ are mimetic, and take to a remarkable degree the color of the bark of the tree they happen to inhabit.

It is very certain that full knowledge will largely reduce the number of so-called species. By the necessities of the case, species are at first very largely multiplied. They are very generally based upon a single specimen, often faded, rubbed, or mutilated. Again, varieties and aberrations, in the absence of proof to the contrary, are looked upon as species, and variations are regarded as varieties, if not something higher.

Childhood is troubled with its own diseases. Measles, chickenpox, and whooping-cough are diseases of an eruptive or fungoid character, incident to infancy. The infancy of a science has a like experience. The great trouble is, however, that the results of the diseases remain in the science to retard its growth and weaken its manhood. The diagnosis of the disease is easy, but the pharmacopœia of knowledge has nothing to reach the case, and cleanse science of the foreign and hurtful accumulations of the disorder.

The genus Catocala is a compact one, and with more than ordinary natural boundaries. It is separable, on the Hubnerian plan, into several groups by the color of the hind wings of the species. But, as always, this method of division is artificial and superficial, and does not, by any means, express the affinities of the species here or elsewhere. Zoe and Ilia, Cerogama and Relicta, Illecta and Concumbens are near each other, though the hind wings differ in color; and so with many others. Color is the least reliable expression of relationship; yet this is the best we can do at present.

The species, as a rule, are very variable. They are mimetic in their coloration, and are in the main, we believe, conformed in color to the bark of the tree, on the leaves of which the larvæ feed, and on which, naturally, the insect more generally rests. There is seemingly nothing constant which appeals directly to the eye : the ground color of the primaries, the dashes upon the wings, the sheen of the wings, the transverse lines in their distinctness and dentations, the width and shape of the bands of the secondaries, and the shading of their colors, are inconstant. We make this general, for we believe no species has been collected in large quantities but has furnished many surprises in the range of its variation from any given form.

No final determination of species and varieties can as yet be made which will be received by all scientific men. We are all human ; "blood is thicker than water" ; our species are our children ; and it is hard to confess that even facts can destroy them. Justice can not be done for many years to come, for the namers of most of our Catocalæ live ; and though we love science, and desire as soon as possible to see the end, yet, in view of the love we bear our living fathers in Entomology, we freely pray for each, "Serus in cœlum redeas." Though, in some instances, for the comfort of those who are to take our places, we devoutly wish that their "works could follow them."

Species and all divisions, higher or lower, are to an extent artificial ; but the aim ought to be to make them as little artificial as possible. Definite divisions do not always exist in nature, but divisions do generally exist sufficient to make use of as limitations. The effort should be in genera always, in species and variations as much as possible, to follow nature. It is the proper method; for science is nature classified and catalogued, and distinctions indicated by names should be given only when nature gives distinctions indicated by gaps. It is the method of convenience ; generic distinctions are for little else than convenience. The specific name is the only necessity as a rule, and might be always so. Generic names ought to be used only so as to mark easily evident groups of species, whether the number of species be few or many—whether one or a thousand.

In these things we can not all think alike. Nature predestines our way of looking at these matters, and we must be natural, or we become parrots and hypocrites. In science, as in religion, we ought to believe in and practice charity toward those who differ from us. Fanatics, bigots, and dogmatists are more common in science than in religion (which is saying a great deal). In both cases the characteristics prove that the person manifesting them is neither rightly scientific nor truly religious.

Taking the divisions below the genus, we have the following ideas:

1. A *species* is a certain form breeding true to itself in its own limitations, and which, however variable with regard to itself, does not in any place or under any circumstances, in the outreach of its variations, overlap any other form and become its counterpart.

2. A *variety* is a form of a species, connected with it by intergradations, but which, under certain circumstances, exists as a constant form, to the exclusion, or almost entire exclusion, of any other form of the species, or which, without intergrades, exists permanently under any circumstances, yet by breeding is known to be connected by direct descent with the other forms. A permanent variety, breeding true to itself only, becomes a species.

3. When, in the same locality, certain forms of the same species exist connected by intergrades, *all the forms are, as much as the type-form, valid representatives of the species.* As a matter of convenience and explicitness, it is well to have names for forms widely varying from the type-form; but they, at best, express *sub-varieties*, and, in cataloguing, *must be considered synonymns only of the original name.* In this matter we would not be quite as radical as some coleopterists who throw out names which designate forms of the same species, no matter how different to ordinary observation, and will not have them used at all*; yet, if synonomy is strictly carried out, these follow the only rule which can be defended as logical. A sub-variety, existing to the exclusion of other forms, becomes a variety.

4. An *aberration* is a form of a species separate from the normal form, without intergrades, and appearing without permanency. A permanent aberration becomes a variety or species.

5. Determination ought to cover the whole history of the insect.

6. Well-marked forms must be considered valid species until, by breeding or intergrades, they are connected with other forms so closely as to allow no reasonable doubt of their identity.

7. Species may be very close to each other.

8. Varieties and sub-varieties may be very widely separated.

9. A single specimen, or single specimens at distant intervals of time, taken in a locality which for years has been pretty thoroughly collected over, and differing from described species, should be cautiously adjudged a new species; for, if allied to a species common in the locality, it is almost surely a variation of that species; and, if widely separated from any species taken there, is yet likely to be a variety or aberration of some species well known.

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* Dr. Packard, in his "Geometrid Moths," has, we see, adopted this rule.

On this basis, and with the kindly assistance and friendly counsel of Messrs. Strecker, Henry Edwards, and Edward L. Graef, we have endeavored to catalogue the species of the Catocalæ of North America so far as described at the present time. Yielding to a desire to have the relations of the variations expressed, we will catalogue all names of variations which, under the above rules, are regarded by us as synonymns, under the heading sub-variety. We deprecate the addition of this distinction, and make it only to explain our catalogue, and hope the time will hasten when, lepidopterological scale-splitting being ended, synonymns can be expressed without an explanation.

We begin our catalogue with the small, yellow-winged species, as these seem more naturally to follow after Leucanitis and Parthenos.

PART II.—Catalogue of the Catocalæ of North America, with notes.

A. *Species with Hind Wings of Various Shades of Yellow.*

a. CENTRAL BLACK BAND WANTING.

1. **Messalina**, *Guen.*

2. **Belfragiana**, *Harvey.*

Jocasta, *Streck.*

It is almost certain this is identical with Messalina.

3. **Amica**, *Hubn.*

Androphila, *Guen.*

Sub-variety **Lineella**, *Grt.*

b. CENTRAL BLACK BAND PRESENT.

* *Recurved back on inner side of wing to the base.*

4. **Minuta**, *Edw.*

Sub-variety **Parvula**, *Edw.*

5. **Gracilis**, *Edw.*

Sub-variety **Similis**, *Edw.*

6. **Grynea**, *Cram.*

Nuptula, *Walk.*

Variety **a. Alabamæ**, *Grt.*

From the description we should judge Alabamæ to be at best a sub-variety of Grynea.

7. Præclara, *Grt.* and *Rob.*

Very close to the preceding, with markings practically identical, though heavier. As far as we are able to learn, it is found only in company with Grynea and in the north. The specimens taken, as a rule, bear in number a certain regular percentage to specimens taken of Grynea. It is, therefore, likely a variety of Grynea, though we do not feel sufficiently certain of this to put it as such.

8. Fratercula, *Grt.* and *Rob.*

Variety **a. Atarah,** *Streck.*

9. Olivia, *Hy. Edw.* BULL. B'KLYN ENTO. SOC., Vol. II, No. 12.

10. Formula, *Grt.* and *Rob.*

Sub-variety **Aholah,** *Streck.*

11. Amasia, *Westw.*

12. Micronympha, *Guen.*

13. Connubialis, *Guen.*

These last two species are not, that we know of, identified in American collections. They are probably identical with some other species or varieties given in this list.

14. Polygama, *Guen.*

Sub-variety **Pretiosa,** *Lint.*
Sub-variety **Cratægi,** *Saun.*
Sub-variety **Mira,** *Grt.*

As may be imagined from the above, this is a very variable species.

15. Gisela, *Meyer.* BULL. B'KLYN ENTO. SOC., Vol. II, No. 12.

** *Not recurred back.*

16. Nuptialis, *Walk.*

Myrrha, *Streck.*
Sub-variety **Abreviatella,** *Grt.*
Variety **a. Whitneyi,** *Dodge.*

We are unable to see any difference except in size, and that neither much nor constant, between Nuptialis and Abreviatella. Whitneyi seems to be very constant, but it is very much like Nuptialis, and, as by all Abreviatella has heretofore been judged a variety of Whitneyi, we will respect the judgment of the public, and express our own, by putting Whitneyi as a variety of Nuptialis, which Abreviatella equals.

17. Frederici, *Grt.*

18. Illecta, *Walk.*

Magdalena, *Streck.*

19. Clintonii, *Grt.*

20. Amestris, *Streck.*
Anna, *Grt.*
Variety **a. Wescottii,** *Grt.*

We are sorry in our service of science to be compelled to judge between Messrs. Strecker and Grote in a matter which has been so prolific of ill-feeling between them. Both claim priority in the naming of three species of the Catocalæ. Attempting to get at the truth, irrespective of personal feeling toward either of these gentlemen, to both of whom we are under obligations for favors, we give our judgment in favor of the names of Mr. Strecker for the following reasons: 1. They are all strictly Catocaline, which all the others are not. 2. The species named are illustrated by good colored figures, which make it possible to recognize the species described. As every one knows, in species so closely allied as are many of the Catocalæ, a verbal description can hardly be relied on for identifying an insect. 3. And this is the only reason which has legal weight, because Mr. Strecker's names were given prior to those of Mr. Grote. (a). Presumably so. The part of Mr. Strecker's work in which his descriptions are given (Part 11 of Rho. and Het. of N. A.), completely finished, was received by subscribers before the middle of November, 1874, certainly by the 10th of the month. Mr. Strecker claims to have made his descriptions in August, 1874. He writes his own text, is his own lithographer and colorist. The letter type, of which the lithographed plates and the date are a part, must be finished before the coloring is done. Ten weeks do not seem a long time to give to the coloring of a whole edition of plates. Mr. Strecker's claim has on the face of it every evidence of truthfulness. (b). If advance proof-sheets count in establishing priority, we have the evidence of gentlemen in Brooklyn that they saw Mr. Strecker's advance sheets in August. Apart from this, complete evidence is given by letters received at the time by Mr. Strecker from Mr. Chas. A. Blake, curator of American Entomological Society, (who saw to the printing of Mr. Grote's descriptions), and this we have corroborated by Mr. Blake in writing, that the type of Mr. Grote's descriptions was not set up till the latter part of October or early in November, and certainly was uncorrected for the printer November 10, 1874. (c). It is doubtful whether advance sheets establish priority. They certainly ought not to do so. Mr. Strecker's work complete appeared November 10, 1874. The "Transactions of the American Entomological Society" did not appear until six or eight months later. So, in every way, Mr. Strecker's names have priority over those of Mr. Grote. Amestris, Delilah, and Judith must stand as the names of the insects, in place of Anna, Adoptiva, and Levettei.

[TO BE CONTINUED.]

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. III. BROOKLYN, JUNE, 1880. No. 2.

Catalogue of the Catocalæ of North America, with Notes.

(*Continued.*)

21. Badia, *Grt.* and *Rob.*
  Variety a. Cœlebs, *Grt.*

This determination is on the authority of Mr. Strecker, whose specimens were identified from those identified by Mr. Grote. Mr. Strecker has intergrades between the two species.

22. Antinympha, *Hubn.*
  Paranympha, *Dru.*
  Affinis, *Westw.*
  Melanympha, *Guen.*
23. Serena, *Edw.*
24. Consors, *Guen.*
25. Muliercula, *Guen.*
26. Nebulosa, *Edw.*
  Ponderosa, *Grt.* and *Rob.*
27. Habilis, *Grt.*
  Sub-variety Basilis, *Grt.*
28. Innubens, *Guen.*
  Flavidalis, *Grt.*
  Sub-variety Scintallans, *Grt.* and *Rob.*
29. Paleogama, *Guen.*
  Sub-variety Phalanga, *Grt.*

Phalanga is undoubtedly connected with Paleogama, but it may be an aberration rather than a variation.

30. **Piatrix**, *Grt.*
31. **Neogama**, *Ab.* and *Sm.*
 Communis, *Grt.*
32. **Subnata**, *Grt.*
33. **Delilah**, *Streck.*
 Adoptiva, *Grt.*
34. **Cerogama**, *Guen.*
 Sub-variety **Bunkeri**, *Grt.*

Bunkeri is hardly far enough from the type-form of Cerogama to be distinguished from it.

35. **Zoe**, *Behr.*

Probably the Pacific form of Ilia, which it very much resembles. The hind wings are more of a yellowish shade.

B. *Species with Hind Wings of Various Shades of Red.*

a. HIND WINGS FLAME OR SALMON RED.

36. **Ilia**, *Cram.*
 Sub-variety **Uxor**, *Guen.*
 Sub-variety **Snowiana**, *Grt.*

Ilia is subject to very much variation of the primaries.

b. HIND WINGS WITH VIOLET SHADE.

37. **Aholibah**, *Streck.*

c. HIND WINGS WITH SHADES OF CRIMSON RED.

* *Black band as a rule not extending to the inner margin.*

38. **Parta**, *Guen.*
 Sub-variety **Perplexa**, *Streck.*

Perplexa is very near to the type-form of Parta.

39. **Marmorata**, *Edw.*
40. **Faustina**, *Streck.*
 Sub-variety **Perdita**, *Hy. Edw.*
 Variety a. **Zillah**, *Streck.*
41. **Irene**, *Behr.*
42. **Augusta**, *Hy. Edw.*
43. **Unijuga**, *Walk.*
 Sub-variety **Junctura**, *Walk.*
 Sub-variety **Meskei**, *Grt.*

Both sub-varieties are hardly distinguishable from Unijuga.

44. **Nupta**, *Linn.*

Taken in Massachusetts, Long Island, and Pennsylvania by persons who ought to know the species, and are reliable. It is the only species found in Europe as well as America.

45. Californica, *Edw.*

Variety **a. Cleopatra**, *Hy. Edw.*

Mr. Henry Edwards agrees with us in our determination of the place and varietal standing of both Cleopatra and Perdita.

46. Briseis, *Edw.*

Sub-variety **Semirelicta**, *Grt.*

Variety **a. Grotiana**, *Bailey.*

Briseis is one of the most variable of all our species. In the east, it is, as a rule, much darker than in the west; and, unfortunately, Mr. Edwards' type and Mr. Strecker's picture are extreme examples of the eastern form. But, from the dark type to the very light Semirelicta, intergrades exist. It is probable that one or more of the Pacific coast species will yet be determined as belonging to it in its variations. Grotiana is pretty constant in some localities in the west, and seems to be a good variety. It is about midway in the variations of the species, and is a very beautiful insect.

47. Beaniana, *Grt.*

This is almost to a certainty a sub-variety of Briseis. But one example has been found in a thoroughly explored district, and that but slightly differs from Briseis.

48. Pura, *Hulst.* Bull. B'klyn Ento. Soc., Vol. II, No. 12.

49. Verrilliana, *Grt.*

Ophelia, *Hy. Edw.*

Variety **a. Ophelia**, *Hy. Edw.* Bull. B'klyn Ento. Soc., Vol. II, No. 12.

We are glad to see through the description of a new and well-marked variety the name of the "fair and gentle Ophelia" is not to be lost to the Catocalæ.

50. Ultronia, *Hubn.*

A very variable species.

51. Herodias, *Streck.*

52. Coccinata, *Grt.*

Sub-variety **Circe**, *Streck.*

Sub-variety **Sinuosa**, *Grt.*

53. Hermia, *Hy. Edw.* Bull. B'klyn Ento. Soc., Vol. II, No. 12.

54. Mariana, *Hy. Edw.*

The hind wings of Mariana have a violet shading to the red.

** *Black band extending nearly or quite to inner margin; narrow, and with a sharp turn, forming nearly a right angle on the outer margin of the band.*

55. Jessica, *Hy. Edw.*

56. Stretchii, *Behr.*

57. Portia, *Hy. Edw.* Bull. B'klyn Ento. Soc., Vol. II, No. 12.

58. Hippolyta, *Hy. Edw.*

d. HIND WINGS BRIGHT ROSE RED.

59. **Amatrix**, *Hubn.*
  Selecta, *Walk.*
    Sub-variety **Nurus**, *Walk.*
  Editha, *Edw.*

60. **Cara**, *Guen.*
    Variety a. **Carissima**, *Hulst.* BULL. B'KLYN ENTO. SOC., Vol. II, No. 12.

61. **Concumbens**, *Walk.*

e. HIND WINGS DULL BRICK RED.

62. **Luciana**, *Hy. Edw.*
63. **Nebrascæ**, *Dodge.*
64. **Aspasia**, *Streck.*
65. **Walshii**, *Edw.*
  Arizonæ, *Grt.*

C. *Species with White Band on Hind Wings.*

66. **Relicta**, *Walk.*

D. *Species with Hind Wings Black.*

a. FRINGE LIGHT COLORED, OR WHITE.

67. **Tristis**, *Edw.*
68. **Judith**, *Streck.*
  Levettei, *Grt.*
69. **Epione**, *Dru.*
70. **Robinsonii**, *Grt.*
71. **Retecta**, *Grt.*
72. **Flebilis**, *Grt.*
73. **Vidua**, *Ab.* and *Sm.*
  Desperata, *Guen.*
74. **Viduata**, *Guen.*

We have been perplexed as to what to do with regard to the names of these last two species. The insect figured in the work of Abbott and Smith, to which was given the name Vidua, is now generally, if not universally, recognized as being identical with the species called Desperata by Guenee. Why the name Vidua has been dropped, unless because it is similar to Viduata, we can not find out; and that is no reason at all, for, then, Viduata ought to be the one to go. Certainly, if the name Vidua be not retained, great injustice will be done Abbott and Smith, who were pioneers in the science, and who were more thorough in their work than the vastly greater portion of Lepidopterists are now, since they gave colored illustrations of imago, larva, pupa, and food plant. There is no doubt that the names Vidua and Viduata are nearer each other than is to be desired.

Guenee probably gave the name Viduata under the impression it was the insect Vidua of Abbott and Smith. But the likeness of sound does not warrant the changing of either name, and need not lead to confusion. We have similarities elsewhere, where no change is thought necessary, as, e. g., Papilio Pompeus, *Cram.*, and Papilio Pompeius, *Fabr.* It would seem expedient to let the species stand as they are generally received, with Vidua as a synonym of Desperata. But neither in morals nor in entomology should right and justice give way to expediency.

75. Dejecta, *Streck.* BULL. B'KLYN ENTO. SOC., Vol. II, No. 12.

76. Ulalume, *Streck.*

77. Lacrymosa, *Guen.*

78. Agrippina, *Streck.*

Variety **a. Sub-viridis**, *Harvey.*

Sub-viridis is likely only a sub-variety of Agrippina.

79. Sappho, *Streck.*

We incline very strongly to the opinion suggested by Mr. Strecker when he described it, that this very charming insect is but an extreme variety of Agrippina.

b. FRINGES DARK.

80. Obscura, *Streck.*

Simulatilis, *Grt.*

81. Insolabilis, *Grt.*

Sub-variety **Residua**, *Grt.*

Variety **a. Angusi** *Grt.*

We have dropped Catocala Adultera, *Hinze*, from the list of North American species. It is found in Russia and Siberia, and resembles some of our Pacific coast species. One specimen, we believe, was said to have been received from California some years since. But, as none others have been taken, we are certain either there was a locality mistake, or one of an allied Pacific species was regarded as Adultera.

There have been some specimens sent from California under the name Catocala Virgilia, *Hy. Edw.* These stand in many collections under that name. Mr. Edwards assures us that he has described no insect by that name, and agrees with us that our specimens received under that name are nothing but a slight modification of Irene, *Behr.*

One species, Catocala Cassandra, *Hy. Edw.*, has been found in Mexico, but not as yet in the United States. This is the only species as yet known to the American continent which is not found in our country.

We express our hearty thanks to Messrs. Strecker and Henry Edwards for the use of original types of their own species, as well as those of Dr. Behr, now in Mr. Henry Edwards's possession.

SPILOSOMA (Hyphantria) CUNEA. *Drury.*

In the year 1770 Drury described one of our common Bombycidæ under the name of Bombyx Cunea, and the species was later by Westwood referred to the genus Spilosoma.

Harris, in 1833, created the genus Hyphantria, to which he referred *Cunea*, and added to it his species *Textor*, while, later, Fitch described another species under the name of *Punctata*.

The two first-named species (?) are well known and common on Long Island. I have taken numbers of specimens, although I could not for the life of me believe there were two species. I, however, followed the example of other lepidopterists, and labelled my white specimens *Textor*, and those with many black spots, *Cunea*. The specimens, however, intergrade, as I have often met with specimens with very few black spots, which circumstance proved that they were one and the same species. I received a letter (May 17th) from my friend, Mr. Otto Meske, of Albany, stating he found *Cunea* and *Textor* in copulation, which I had also noticed on several occasions. This is an additional proof of their identity.

Excepting that *Cunea* is somewhat slighter, I see no reason for separating it from the genus Spilosoma, and would propose to refer it again to the genus wherein it was correctly placed by Westwood forty-three years ago.

Spilosoma Cunea is, like most Arctians, a variable species, varying from a pure, immaculate white, to the black, spotted form.

I hardly think these forms of sufficient importance to warrant their retention as varietal names; however, for the purpose of correctly determining them, I add the synopsis:

Spilosoma Cunea, *Dru.* White, with many black spots.
  Variety **Punctata**, *Fitch.* White, single band of small, black spots.
  Variety **Textor**, *Harris.* Pure white.

Edward L. Graef.

What we Need.

Among the many collectors with whom I am acquainted, there is not a single one who can devote all his time to entomology; every one is engaged in another by far more earnest business, which absorbs most of his time, in which he has to work for his daily bread, and can spend rarely a few evening-hours or, *horribile dictu!* Sundays to entomology. "Short is life and long the art," but, if we can spare only a trifling part of the short life to the long art, what can be expected from us? Besides but little time, the majority of collectors have also but little money to spend.

Speaking as a Coleopterist, I doubt if the descriptions and publications on N. A. Coleoptera could be bought, say, for $1,000. Now the greater part of us have neither the money to buy nor the time to read all these books. What, then, shall we do?

We need short, clear, *Synoptic Tables of the known species*, such as were furnished by Dr. Horn and Dr. Leconte, giving the principal characters of those species, their size and locality.

This is a thing indispensable to every collector, and far more important and more desirable than any descriptions of new genera and species.

The present state of Coleopterology in the United States seems to me like the pavement of a large city, some streets, like Cychrus Street, Curculio Avenue, etc., are in the best order, A No. 1—every man, even a blind one, can pass over them in perfect safety—but, alas! some of the streets are full of dangerous holes, with hills and encumbrances, and some are the aboriginal mud canals. And whose fault is it? The Government, instead of paying well such persons as could do the needed work thoroughly, wastes heaps of money, e. g., by issuing many Reports—on the bad condition of the streets.

. . . .

We hope to be able to give from this time forward, every month, four pages of Synoptic Tables—yea, if the number of subscribers would be increased, we would even give more.

We can not pass without calling the attention of our readers to the rare chance to obtain separately the most valuable papers published by Dr. Leconte, Dr. Horn, Messrs. Crotch, W. H. Edwards, Grote, etc., in the "Proc. and Trans. of the American Ento. Soc. of Philadelphia."

Send for price-lists to Mr. E. T. Cresson, P. O. Box 31, Philadelphia, Pa.

NEW PUBLICATIONS.

Geo. H. Horn, M. D.

Trans. Am. Ent. Soc. VIII. March, 1880. pp. 69–154.

Notes on the Species of Asaphes of the U. S.—Reduces the number of species from 20 to 11. *A. coracinus*, syn. to CARBONATUS ; *hemipodus*, and *aereus*, syn. to DECOLORATUS ; *baridius*, syn. to MEMNONIUS: *melanophthalmus*, *carifrons*, *tener*, *consentaneus*, and *planatus*, syn. to BILOBATUS. Add to the check-list, A. SOCCIFER, *Lec.*, U. S. Surveys, 1876. Append. H. p. 516.

Synopsis of the Dascyllidæ of the U. S., with plate.—Describes as new : Macropogon rufipes, *N. H., Ills.* Eurypogon californicus, *Cal.* Allopogon (n. g.) villosus, *Cal.* Dascyllus plumbeus, *Cal.* Anchycteis (n. g.) velutina, *Nev., Cal.* Ptilodactyla angustata, *Fla.* Dicranopselaphus variegatus, *Ills., Md.* Aceneus (n. g.) quadrimaculatus, *Cal.* Helodes maculicollis, *Can., N. H., Pa.* Cyphon exiguus, *Cal.* Placonycha (n. g.) to *Dicranopselaphus* Edwardsii, Lec.

Notes on some Genera of Cerambycidæ with Description of New Species, with plate.—Describes as new : Acanthoderes peninsularis, *Cal.* Coenopoeus (n. g.) (to Leptostylus Palmeri) Leptostylus nebulosus, *Nev.* L. terraecolor, *Fla.* Liopus Wiltii, *Tex.* Urographis (n. g.) Oeme striangulata, *Utah.* Aethecerus lutecinctus, *Ariz.* Sicyobius Brousii, *Kan.* Idoemea Fulleri, *Tex.*

Contributions to the Coleopterology of the U. S., No. 3, with plate.—Describes as new : Cicindela anthracina, *N. Mex.* Pterostichus Hamiltoni, *Pa.* P. Agonus, *Alaska.* Harpalus obliquus, *N. Mex.* Xenomycetes (n. g.) Morrisoni, *Nev.* Phymaphora californica, *Nev.* Teretrius placitus, *Nev.* T. montanus, *Col.* Geotrupes occidentalis, *Cal.;* with synoptic table of Geotrupes, Plectrodes palpalis, *Cal.* Phileurus (syn. table) Acmaeodera lanata, *Utah.* Cymatodera gigantea, *Tex.* Trichodes simulator, *Ariz.* Trogodendron Edwardsii, *Ariz.* Table of genera of Cleridæ, Dolichosoma tenuiforme, *Tex.* Asida quadricollis, *N. Mex.* Change Asida gibbicollis to Gabbii ; Helops perforatus, *Tex.;* H. spretus, *Nev.*, with syn. table, Dendroides picipes, *Cal.*

B. Neumoegen.

Descr. of Edwardsia (n. g.) brillians. Tex.

Can. Ent. XII, p. 67.

W. H. Edwards.

Descr. of prepar. Stages of Argynnis Alcestis, Edw., p. 69.

On Certain Species of Satyrus, cont., p. 90.

Can. Ent. XII.

A. R. Grote.

Can. Ent. XII.

Preliminary list of N. A. Species of Crambus, p. 77.

North American Noctuidæ in the Zutraege, p. 84.

New Noctuidæ. Xylomyges dolosa and Mamestra defessa, p. 88.

North Am. Ent. Vol. I.

New Species of Moths. Argotis dolis, *Col.* A. sublatis, *Col.* A. Worthingtoni, *Ind.* A. Baileyana, *N. Y., N. H.* A. infirmatis, *Cal.* Hadena Hulstii, *Col.* Gortyna serrata, *Col.* Apatela thoracica, *Col.* Aedis simulatilis, *Col.* Pseudaglossa scobialis, *Cal., N. Y.* Aesopia planalis, *Col.*, p. 91–95.

New Species of Moths : Nymphacella (n. g.) dispar, *N. Y.* Ambesa (n. g.) laetella, *Col.* Pædisca Fernaldana, *Col.* Coelodasys telifer, *Tex., Ga.*, p. 97–99.

Description of Cilla distema, *Tex.*, p. 99–100.

Prof. C. F. Fernald.

On the Genus Argrya, Hubn.

North Am. Ent., p. 100–102.

J. H. Comstock, *Entom. to the Depart. of Agriculture.*

Report on the Cotton Insects. *Washington Gov. Print. Office*, 1879.

Helene S. King. *Psyche, Vol. III, p.* 51–53.

Life-History of Pleotomus pallens, Lec.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. III. BROOKLYN, JULY, 1880. No. 3.

Description of the Larva of Chlænius Laticollis, *Say.*

Length of full-grown larva, 25 mm.; width of third abdominal segment, 4 mm.

Form elongate.

Color. Head light rufous; front dark; thoracic scutes dark blue; abdominal scutes black; antennæ pale yellow; legs pale, with coxæ black; apical appendages, one-fifth of their length at base, rufous, at middle black, at tip nearly white. The ventral scutes, arranged as in Dicælus, Pterostichus, etc., are pale brown.

Head subquadrate, somewhat flat; occiput slightly convex.

Eyes. Six ocelli on each side; a long bristle on the ophthalmic ridge.

Antennæ four-jointed, situated immediately behind base of mandibles. First joint elongate, with base and tip equally thick; second joint clavate, slightly shorter than first; third joint as long as second, base and tip equally thick, with thickened curvature outward and forward; fourth joint slender, half as long as the preceding.

Mandibles strongly developed, arcuate interiorly near the middle with a blunt process and a very minute, slender penicillus of silky hair.

Maxillæ as long as the antennæ; first joint elongate, interiorly near tip, with a two-jointed immovable process, below which there is another minute process terminating with a bristle, and externally with a four-jointed palpus, first and terminal joint equal in length, the latter aciculate; the two middle joints longer; the penultimate is narrower at tip.

Mentum bidentate ; the ligula narrower at base, gradually broadening toward the tip, the median apex terminating with two bristles; palpi two-jointed, equal in length, first joint club-shaped, rather stout, second joint narrow, cylindrical, and with an area of sensitive aciculi around the *free* tip.

Prothorax a little wider than the head, slightly longer than broad, equally broad at base and apex ; sides parallel.

Mesothorax transverse, slightly shorter than the prothorax, but of equal breadth ; sides somewhat arcuate, tergal scute sub-quadrate, with rounded angles.

Metathorax similar to the preceding, but tergal scute considerably shorter.

Abdomen. Tergal scutes of the first eight segments elevated, much shorter than broad, with posterior angles ending with a bristle, anteriorly rounded off at the sides ; ninth segment resembling a tubular annulate appendage, beset with short, stiff bristles ; above the tubus are two laterally inserted, thin appendages, 9 mm. long.

Legs gradually longer from the first to the third pair; coxa prominent, conical ; femur of anterior pair scarcely longer than trochanter. Tibia as long as trochanter, with an area of spinules. Two equal claws arise from the slender tarsal piece.

Spiracles, nine pairs. The anterior and largest circular spiracle is under the fold near posterior angle of prothorax ; the second, much smaller, sub-orbicular at the posterior angle of metathorax ; the other spiracles are in the sides of the abdominal segments 1 to 7 respectively near the anterior angle.

March 5. I found five larvæ of Chlænius sericeus. Four died from March 12th to 16th ; the remaining full-grown larva seemed, April 16th, to pupate, but a few days afterward it became covered with white pupæ and died. The pupæ developed, and proved to be Ichneumonids.

April 1. Several species of Chlænius laticollis, *Say*, were brought into the breeding-cage. Beginning of June they copulated in daytime and laid eggs in the ground.

June 23. I found ten larvæ, 10 mm. long ; anal fork of the same length, always erected upward ; very lively, fed very eagerly on maggots of some flies. All died except three, which I had to take with me into the country. Two died July 2 ; the third pupated July 21, after remaining nearly motionless for over a week. The pupa is very peculiar. Remained in pupa state 7 days.

F. G. SCHAUPP.

Loxandrus, *Lec.*

Black species, elytra, with iridescent reflections; mandibles not striate, mentum-tooth emarginate, ligula not carinate, front tarsi of ♂ obliquely dilated. Dr. Leconte gives a synopsis in "Proc. Am. Phil. Soc.," XVII, p. 375, as follows:

A. Side margin of prothorax explanate and reflexed toward the hind angles, which are entirely rounded into the base and sides; antennæ and palpi rufo-piceous; legs dark. (Species large and middle sized.)

B. Side margin of prothorax not explanate toward the hind angles, which are not rectangular. (Species large and small.)

C. Side margin of thorax not explanate toward the hind angles, which are rectangular. (Species small.)

A.

Large species (length, 13·3–10 mm.) . . . . . . 2.
Smaller species (length, 10–7·8 mm.) with hind angles of prothorax less broadly rounded. . . . . 3.
2. Side margin of prothorax broader and more distinctly reflexed toward the base; elytra with more finely punctulate striæ; iridescent reflections more brilliant. . . . 1. *reflexus.*
Side margin of prothorax less definitely limited toward the base; elytra with less finely punctured striæ; reflections very bright. 2. *saphirinus.*
3. Prothorax regularly narrowed from base to tip, sides feebly explanate toward the base. . . . . . 3. *calathinus.*
Prothorax but slightly narrowed in front; sides more distinctly explanate toward the base. . . . . . 4. *floridanus.*

B.

Larger species (length, 13–9·3 mm.). . . . . . 2.
Small species (length, 7·7–5·8 mm.). . . . . . 4.
2. Legs dark. . . . . 3.
Legs ferruginous; prothorax wider than long; hind angles obtuse, blunt, or rounded at tip. . . . . . 5. *rectus.*
3. Prothorax wider than long; hind angles slightly obtuse, not at all rounded. . . . . 6. *brevicollis.*
Prothorax very slightly wider than long; hind angles rounded at the extreme tip. . . . . 7. *minor.*
Prothorax not wider than long; hind angles not rounded. 8. *erraticus.*

4. Legs dark; hind angles of prothorax not rounded; elytra with a round sutural red spot behind the middle. . . . 9. *celer.*

Legs dark; hind angles of prothorax rounded at tip; varies with the legs; ferruginous; seems to pass insensibly to *L. velox.* 10. *agilis.*

Legs yellow; hind angles of prothorax rounded at tip. 11. *velox.*

a. Prothorax rounded on the sides, not conspicuously wider than long; *velox.*

b. Proth. rounded on the sides, conspicuously wider than long; *pusillus.*

c. Proth. nearly square, less rounded on the sides; *tæniatus, piciventris.*

C.

Legs dark; elytral striæ feebly punctured. 12. *rectangulus.*

Legs yellow; elytral striæ coarsely punctured. 13. *crenatus.*

1. *reflexus*, Lec. Proc. Am. Phil., XVII, 376. Fla. 10–13 mm.
2. *saphyrinus*, Chaud. Bull. Mosc., 1843, IV, 766. La. 11·5–12 mm.
3. *calathinus*, Lec. Proc. Am. Phil., XVII, 376. Fla. 8·8–10 mm.
4. *Floridanus*, Lec. " " " " 373. Fla. 7·4–8·5 mm.
5. *rectus*, Say. Trans. Am. Phil., II, 58. La., Tex. 11·5–12 mm. = *lucidulus*, Dej. Spec. III, 239, var. *laticollis*, Chaud. Bull. Mosc., 1843, IV, 766.
6. *brevicollis*, Lec. Ann. Lyc., IV, 338 (= *minor*, Lec., ibidem). La., Fla. 7 mm.
7. *minor*, Chaud. Bull. Mosc., 1843, IV, 766. La. 6·2–6·6 mm. = *nitidulus*, Lec. Ann. Lyc., IV, 339. La.
8. *erraticus*, Dej. Spec. III, 240. Lec. Ann. Lyc., IV, 339. Fla., La. 6·5 mm.
9. *celer*, Dej. Spec. III, 246. Fla., Tex. 6 mm.
10. *agilis*, Dej. Spec. III, 244. Fla., Pa. 5–6 mm.
11. *velox*, Dej. Spec. III, 245. La., Ga. 5–5·5 mm.
    var. *tæniatus*, Lec. Jour. Ac. Phil., II, 252, var. *piciventris*, Lec. Ann. Lyc. IV, 337, = *pusillus*, Lec.
12. *rectangulus*, Lec. Proc. Am. Phil., XVII, 377. Fla. 6·5 mm.
13. *crenatus*, Lec. Jour. Ac. Phil., II, 1852, p. 252. Fla.

Besides the above-mentioned species, there are short descriptions of seven other species of *Loxandrus*, by Baron Chaudoir (*Extrait de la Revue et Magazin de Zoologie*, 1868, pp. 61–64), mostly based on a single specimen, viz.:

lucens, 9–10 mm., Tex.; *parvulus*, 7·5 mm., Carolina; *micans*, 7 mm., La.; *piceolus*, 6 mm., Tex.; *crenulatus*, 6·5–7 mm., Tex.; *proximus*, 7·25, Tex.; and *rapidus*, 7 mm., La. The first three are said to resemble *rectus*, the other to *velox* and *celer*, but no exhaustive synopsis can be prepared without reference to the types.

F. G. S.

EVARTHRUS, *Lec.*

Posterior tarsi not grooved on outer side; prothorax variable; elytra with rounded humeri, and one dorsal puncture; scutellar stria usually short or punctiform, rarely long; metathoracic episterna short; first ventral segment margined at the base; prosternum not margined behind.

A. Prosternum deeply sulcate, emarginate at tip; prothorax quadrate, feebly narrowed and not constricted at base; basal foveæ large and deep, bistriate with a supplementary inner fovea, hind angles carinate; base finely margined each side.

a Hind angles obtuse, sides not sinuate near the base; marginal striæ approximate:

* Prothorax wider than long, scutellar stria wanting.

Prothorax more widely margined, especially toward the base.

Elytral striæ strongly punctured; ♂ ♀ dull. 1. *seximpressus*, Lec.

Prothorax more narrowly margined.

Elytral striæ strongly punctured, ♀ dull, ♂ sub-opaque; *vidua*, Dej. 2. *sigillatus*, Say.

Broader, elytral striæ finely punctured, hind angles of prothorax less obtuse, ♀ ♂ sub-opaque.

** Prothorax as long as wide:

Scutellar stria long, hind angles obtuse, somewhat rounded, less strongly carinate: elytral striæ finely punctured, ♂ dull; *convivа*, Lec. 4. *orbatus*, Newm.

b. Sides of prothorax slightly sinuated near the base, hind angles rectangular; scutellar stria wanting:

* Hind angles very small:

Prothorax more widely margined toward the base; elytra ♀ sub-opaque; marginal striæ approximate. 5. *Engelmanni*, Lec.

Prothorax less widely margined; elytra ♀ very dull; marginal striæ less approximate. 6. *nonnitens*, n. sp.

** Hind angles more prominent, more strongly carinate:

Elytra ♂ ♀ shining; marginal striæ not approximate. 7. *gravidus*, Hald.

B. Prothorax strongly constricted behind, sides suddenly strongly sinuate, hind angles rectangular prominent, carinated, basal foveæ deep, bistriate, base margined each side; prosternum feebly or only obsoletely sulcate.

a. Elytra feebly sinuate at tip, ♀ sub-opaque:

Very large shining, striæ nearly effaced punctured, scutellar long; hind angles of prothorax very prominent. 8. *heros*, Say.

Striæ distinct, punctured, scutellar short:

Hind angles of prothorax very prominent. 9. *colossus*, Lec.

Hind angles shorter and less prominent:

Sides of prothorax very much rounded: *fatuus* Lec., *corax* Lec., *orbatus*, Lec. 10. *sodalis*, Lec.

Sides of prothorax more oblique, less rounded. 11. *furtivus*, Lec.

b. Elytra strongly sinuate toward the tip:

Large, sides of prothorax very much rounded, basal angles longer, more prominent, more strongly carinated. 12. *Sallei*, Lec.

Smaller; (species very indefinite and opinionative):

Anterior transverse impression well defined; hind angles longer, prominent.

Broader, elytral margin stronger, subangulated at the humeri, (elytral striæ sometimes effaced), *latebrosus*, Lec. 13. *substriatus*, Lec.

Narrower, elytral margin finer, not angulated, (elytral striæ sometimes partly effaced), *ovipennis*, Lec. 14. *constrictus*, Say.

Anterior transverse impression feeble, or obsolete, hind angles shorter, though prominent, legs ferruginous, *abdominalis*, Lec., *lixa*, Lec.
15. *incisus*, Lec.

Anterior transverse impression obsolete, hind angles very small, scarcely carinate, outer basal stria punctiform. 16. *vinctus*, Lec.

C. Prothorax strongly rounded on the sides and narrowed behind, basal foveæ single, hind angles not carinate, obtuse, or very small, and feebly prominent.

a. Prosternum feebly or obsoletely sulcate behind:

* Anterior transverse impression feeble:

Elytra tolerably strongly sinuate toward the tip:

Large, hind angles small, nearly rectangular. 17. *unicolor*, Say.

Large, hind angles small obtuse. 18. *rotundatus*, Lec.

Middle sized, hind angles small obtuse; *Brevoorti*, Lec.
19. *spoliatus*, Newm.

Smaller; elytra less sinuate toward the tip:

Hind angles small, prominent, rectangular, *ovulum*, Chaud.
20. *acutus*, Lec.

Hind angles obtuse and rounded, basal foveæ small:

Basal seta of prothorax in front of angle, elytra striate.
21. *obsoletus*, Say.

Basal seta of prothorax at the angle as usual: elytra nearly smooth.
22. *lævipennis*, Lec.

** Anterior transverse impression a finely impressed line near the front margin. 23. *approximatus*, Lec.

b. Prosternum more deeply sulcate behind; hind angles of prothorax obtuse, not prominent:

* Anterior transverse impression a deep line, further from the front margin than in the preceding:

Elytra smooth, or very obsoletely striate. 24. *morio*, Dej.

** Anterior transverse impression not impressed:

Elytra with punctured striæ, fainter behind, but not obliterated: *tenebrosa*, Dej.
25. *faber*, Germ.

18. A. Rhodope, *W. H. Edwards. Male:* Upper side deep red-fulvous ; black markings heavy ; under side of primaries red ; apical area yellow; spots either yellow or well silvered. Under side of secondaries deep red from base to margin ; the belt narrow and paler ; spots silvered or yellow, and heavily edged on upper side with black.

Female: Upper side paler ; under side as in male. Expanse of male, 2·2 inches ; of female, 2·4 inches. British Columbia.

19. A. Halcyone, *W. H. Edwards. Male:* Primaries much produced ; upper side fulvous ; under side of primaries pale fulvous, yellow or buff apically ; spots silvered ; secondaries deep red-brown, mottled buff ; band buff, narrow ; spots well silvered.

Female: More tawny, markings heavier ; under side as in male ; ground of secondaries ferruginous, the band nearly lost in the ground color. Expanse of male, 2·5 inches ; of female, 2·5 to 2·8 inches. Colorado, Wyoming.

20. A. Coronis, *Behr. Male:* Upper side yellow fulvous, black markings light ; under side of primaries buff, basal area orange-fulvous ; sub-marginal and sub-apical spots silvered, often imperfectly ; secondaries mottled ferruginous and red, the disk buff ; belt bright-yellow buff ; spots large and well silvered.

Female: Paler than male, markings heavier ; under side of primaries buff, but orange fulvous from base to hind margin below median; secondaries as in male. Expanse of male, 2·1 to 2·5 inches ; of female, 2·5 to 3 inches. California.

21. A. Callippe, *B'dvl. Male:* Upper side pale fulvous, black markings rather light ; under side of primaries pale buff, spots silvered at apex ; under side of secondaries light buff, spots large and well silvered.

Female: Paler, black markings heavier. Expanse of male, 2·3 inches ; of female, about 3 inches. California.

22. A. Liliana, *H. Edwards. Male:* Upper side deep red-fulvous ; the second row of silver spots on under side of secondaries indicated on upper side by paler spots ; under side of primaries orange fulvous at base and along median nervules, rest yellow buff ; spots silvered ; of secondaries, ferruginous on yellow ground ; belt yellow, very narrow ; the spots large and well silvered.

Female: Paler ; disks and sub-marginal spots whitish ; under side as in male. Expanse of male, 2 inches ; female, 2·2 inches. California.

23. A. Irene, *B'dvl.* *Male:* Upper side red-fulvous; markings light; under side pale fulvous, apical area buff; spots buff or with only a few scales of silver; secondaries ferruginous, a little mottled with buff; belt narrow, buff, encroached on by the ground color; spots large, buff, with a few scales of silver; most of the spots of secondaries run large, sub-quadrangular.

Female: Paler; under side like male. Expanse of male, 2 inches; of female, 2·2 inches. California.

24. A. Nevadensis, *W. H. Edwards.* (A. Meadii, W. H. Edw.) *Male:* Ground color fulvous, from pale to deep; markings light; under side of primaries pale buff; spots silvered; under side of secondaries yellow, mottled with olivaçeous or green; band narrow, clear; spots large, well silvered.

Female: Similar to male. Expanse of male, 2·3 to 2·5 inches; female, 2·5 to 2·8 inches. Nevada, Utah, Montana, British America, Rocky Mountains.

25. A. Edwardsii, *Reakirt.* Very close to the above, but the black marginal bands are heavier; the under side of secondaries olivaceous and encroaching on the belt. Expands about 3 inches. Colorado, Montana.

26. A. Rupestris, *Behr.* *Male:* Upper side deep red-fulvous, black markings heavy; under side of primaries brick red, apical area buff; spots buff without silver; secondaries cinnamon-red on buff ground; the belt buff, narrow, encroached on by the ground color; all spots buff. Expands 2 inches. California.

27. A. Inornata, *W. H. Edwards.* Upper side red-fulvous; under side of primaries cinnamon-brown, apical area buff; secondaries reddish brown; band clear buff; spots buff without silver.

Female: Upper side paler; under side of primaries orange-fulvous; secondaries pale brown mottled buff; a few silver scales on sub-marginal spots. Expanse of male, 2·5 inches; of female, 2·7 inches. California, Nevada.

28. A. Adiante, *B'dvl.* *Male:* Upper side fulvous, black markings light; under side of primaries pale buff, very light at apical area, slightly orange at base; of secondaries pale buff, spots paler. Expands 2 1-8 inches. California.

29. A. Clio, *W. H. Edwards.* *Male:* Upper side yellow-fulvous, black markings slight; under side of primaries buff, red tinted; secondaries buff, mottled with olive and dusted with black; spots buff.

Female: Paler, markings heavier; under side of primaries more fulvous, no silver. Expanse, 2 inches. Colorado, Montana.

BULLETIN

OF THE

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Biological Notes on the Larva of Chlænius leucoscelis, *Chevr.*

Several larvæ were found, August 8th, in a very wet place on the banks of the North Branch of the Callicoon River, under stones near the edge of the water. Six of them were so small that I took them for larvæ of Bembidium, but in one week they had grown very rapidly. In the same locality there were found only species of the above Chlænius and of Patrobus rugicollis, so I guessed that they must be the larvæ of one of these two species.

On August 14th, one of the larger larvæ moulted, the whole being entirely white; after two hours, the head became pale yellow and the abdomen gray (steel-blue). On the 15th it was fully colored. On September 4th it pupated, and on the 7th the eyes became black and the mandibles brown. On September 11th, at 6.15 A. M., it developed.

On the evening of September 11th, the head became green gold, thorax dark brown, elytra light brown, legs and antennæ rufous. September 12th, at 7 A. M., head and thorax were green gold, elytra dark, brown greenish, but not yet fully colored. On September 14th, A. M., it was fully colored.

From twenty-four specimens, only a single one brought to development; all the others died.

There were in the neighborhood of the larva some large dipterous larvæ, perhaps that of a Sialis, living in the wet sand. I procured some, but, as they were much rarer or more difficult to obtain, I ascribed the loss of the other larvæ to the want of appropriate food.

Description of the Larva of Chlænius leucoscelis, *Chevr.*

The general appearance of the larva of *Chlænius leucoscelis* is very different from that of *Chlænius laticollis, Say,* described in our last number, being much stouter and the tergal scutes much broader, of a deep shining black, covering the whole upper surface, so that it resembles rather the larvæ of Carabus or Silpha, while the larva of *laticollis* resembles more that of Dicælus.

Length of the full-grown larva 20 mm.; width of third abdominal segment, 5 mm.; length of anal appendage, 5 mm.

Color: Head dark red, upper surface deep black; beneath, prothorax with a black tridentate scute at base, meso- and meta-thorax with a small cuspidate scute at the middle, pointed towards the base and surrounded by four minute round scutes, abdominal segments 1 to 7 have the same arrangements of scutes as the larva of Dicælus (see Bull., vol. i, p. 3); the eighth segment has a large sub-quadrate scute at the middle and two long narrow scutes at the sides; the ninth segment is entirely black; there is also a small leaf-shaped scute behind each spiracle somewhat more towards the surface. Coxæ and femora black, tibiæ rufous; in young larva, base and apex of anal fork pale and middle black, in full grown, base dark and rest fuscous.

The *labrum* of *laticollis* has five teeth, while in *leucoscelis* the middle tooth is bifid, broader and shorter than the four lateral teeth, and between each of the latter is a series of minute tubercles, usually two or three. The whole surface is punctured, more densely at the exterior.

The first joint of maxillæ is much broader at the apex (while in *leucoscelis* it is broader at base), and the first joint of the inserted process is thickened at middle, somewhat club shaped.

The mandibles are much more incurved at the exterior near the base.

But the most important difference between the two species is an area with three small teeth near the tip at the exterior of the third antennal joint, the tooth nearest the tip being the largest.

A plate, illustrating the descriptions of these larvæ, will appear in either the October or November number.

F. G. Schaupp.

(Argynnis.)

30. A. Laura, *W. H. Edwards.* *Male:* Upper side deep red-fulvous, markings rather heavy ; mesial band of secondaries confluent ; under side of primaries red-orange, apex and hind margin yellow-buff, spots more or less silvered; of secondaries pale yellow, belt very broad, clear yellow ; spots large and well silvered.

Female: Paler, otherwise nearly as in male. Expanse of male, 2·2 inches; female, 2·35 inches. Washington Territory.

31. A. Hippolyta, *W. H. Edwards.* *Male:* Upper side fulvous, markings rather heavy ; under side of primaries pale orange at base, ferruginous at apex, the rest buff ; sub-marginal and sub-apical spots silvered; secondaries deep ferruginous, a little mottled with buff ; belt narrow, buff, much dusted with ferruginous ; all spots well silvered.

Female: Basal area of primaries, beneath, red fulvous, belt of secondaries almost lost in the ferruginous ground color. Expanse of male, 2 inches ; female, 2·25 inches. California.

32. A. Eurynome, *W. H. Edwards.* Upper side light fulvous, with slight black markings ; under side of primaries pale buff, spots silvered on apical area ; of secondaries, pale buff, spots well silvered. Expanse, 1 3-4 to 1 7-8 inches. Colorado.

33. A. Montivaga, *Behr.* (*Arge, Strecker.*) Upper side fulvous, with the usual markings ; under side pale buff, slightly reddish at base of primaries ; spots on under side imperfectly or faintly silvered. Expanse, 1 3-4 to 1 7-8 inches. Nevada.

34. A. Egleis, *Bdv'l.* (♀ Mormonia, *Bdv'l.*) *Male:* Ground color deep fulvous, with rather heavy black markings ; under side of secondaries vary from buff to yellow, and are more or less mottled over basal and discal area with dull ferruginous brown, lighter or darker ; the spots are well silvered or very slightly, or not at all, in which case they are of a clear yellow buff ; the spots of second and third rows are heavily edged with black on the basal side.

Female: Much like male, but paler. Expanse, about 2 1-4 inches. Nevada.

35. A. Chitone, *W. H. Edwards.* *Male:* Upper side dull fulvous ; under side of primaries pale yellow-fulvous at base and below median, rest buff ; spots buff, no silver ; secondaries light ferruginous, mottled buff ; belt broad, clear buff ; spots imperfectly silvered.

Female: Similar to male ; spots of under side sometimes silvered more or less perfectly. Expanse of male, 2 2·5 inches ; of female, 2 5·0 inches. Nevada.

36. A. Hesperis, *W. H. Edwards. Male:* Upper side fulvous, darker at base ; under side of primaries pale ferruginous, yellow at apex, mottled with buff ; of secondaries deep brown-ferruginous, spots buff, or slightly silvered ; belt rather broad and yellow-buff.

Female: Very similar to male. Exp. about 2 1-4 in. Colorado.

37. A. Zerene, *Bdvl. Male:* Upper side red fulvous, with rather heavy black markings ; under side of primaries ferruginous, mottled with buff, reddish toward base ; secondaries brownish ferruginous, spots buff, not silvered ; belt buff.

Female: Same as male ; more reddish on under side of primaries, and the marginal spots on under side of secondaries sometimes silvered. Some varieties have the belt brown instead of buff. Expanse, 2 1-8 and 2 3-8 inches. California, Oregon, Nevada.

Variety **Hydaspe,** *Behr.* (Zerene, *Behr.*—Purpurascens, *Hy. Edw.*)

Variety **Monticola,** *Behr.*

38. A. Macaria, *W. H. Edwards.* Upper side yellow fulvous, markings very light ; under side of primaries orange, apical area yellow-buff ; spots slightly silvered ; of secondaries yellow-buff, at base brown ; belt buff, clear ; spots large and well silvered.

Female: Paler ; on secondaries the second row of silver spots indicated by spots paler than the ground ; black markings slighter than in male. Expanse of male, 2 inches ; of female, 2·2 inches.

39. A. Myrina, *Cramer.* Upper side fulvous, black markings light, borders heavy ; under side of primaries yellow fulvous, ferruginous at apex, marginal spots slightly silvered ; of secondaries ferruginous mottled with buff, spots small and well silvered. Expanse, 1 3-8 and 1 5-8 inches. Eastern, Middle, and Northwestern States.

40. A. Triclaris, *Hubner.* Upper side much like the above, submarginal spots somewhat heavier ; under side of primaries light fulvous, marginal spots yellow ; of secondaries ferruginous, spots yellow, occasionally slightly silvered, marginal spots well silvered. Expanse about 1 1-2 inches. Col., Rocky Mountains, Brit. Am., Lab.

41. A. Helena, *W. H. Edwards. Male:* Upper side bright fulvous, but a little obscured at base, the markings as in *Chariclea*, but delicate ; under side of primaries pale cinnamon brown, ochreaceous at apex, with a ferruginous sub-apical patch ; of secondaries deep ferruginous over basal half, enclosing near outer border of this area an angulated band of yellow spots more or less irrorated by ferruginous; three yellow spots between nervures at base, often obsolete, a round spot in cell ; an indistinct and more or less incomplete band of whitish lunules across the disk ; marginal area thinly washed with brown ferruginous on buff or yellow ground, which last color appears distinctly on upper median interspace, crossed by a series of ferruginous small spots ; along the marginal border a series of elongated white spots, edged anteriorly by ferruginous lunules.

Female: Like male. Expanse, about 1 3-8 inches. Colorado, Montana, New Mexico.

Descriptions of New Noctuidae.

By A. R. Grote.

Agrotis verticalis, *n. s.*

♂♀. Allied to *tessellata* and *campestris*. Hind wings of the male white, like *albipennis*; of the female, white, dusted with fuscous; in the male, a narrow fuscous bordering before the white interlined fringes. Fore wings smooth, dusky gray. Lines geminate, black; basal half-line distinct, and like the anterior line, with an included pale streak. Orbicular large, ovate, decumbent, neatly black-ringed, the ring finely-edged inwardly with pale. Reniform upright, ringed as orbicular, well-sized; both stigmata concolorous. Cell shaded before the orbicular, and centrally and again beyond the reniform, with reddish-brown in the female; in the male this is absent, or replaced by a faint blackish shading. Sub-terminal space shaded with reddish brown, or blackish on costa, where it includes pale ante-apical costal points. Posterior line distinct on costa above the reniform, where it is like the other lines; below, it becomes faint and denticulate. Sub-terminal line as in *campestris*, pale. Terminal space blackish, leaving the apex paler. Two specimens similarly sized with *campestris*, collected by Prof. Snow in Colorado.

Mamestra Crotchii, *n. s.*

♂♀. Olive gray or pale fuscous. Lines obliterate. The most prominent mark is the large, heavily-outlined claviform. Its black border extends below it as a streak above internal margin near the base. Sub-terminal line pale, extending along the veins and forming the usual W-mark, and preceded here by distinct interspaceal black cuneiform marks. Fringes notched with black. Hind wings fuscous, paler at base, with a discal lunule. Beneath pale fuscous, with obliterate lines; on both wings a discal lunule which, on secondaries, joins a black basal ray. Thorax like fore wings, crested. Eyes hairy. The reniform and orbicular are near together; the former darker, a little constricted, bulging inferiorly, the latter decumbent; both spots nearly concolorous, incompletely black-ringed. The tegulæ are incompletely black-margined. Expanse 32 to 34 mil. This distinct form is allied to *trifolii*, and was collected by Crotch, in Oregon. Also from Colorado.

Heliothis interjacens, *n. s.*

This form is intermediate between *umbrosus* (armiger, which also occurs in California) and *phlogophagus*. It has the faded ochreous color of the former, and is in one form nearly as large, and the design of the latter, there being on primaries an angulated median shade, while on the secondaries the marginal band is distinct as well as the discal lunule. The posterior line is shown by a single series of venular dots, and is even as in *umbrosus*, not flexed and double as in *phlogophagus*. The reniform is dark and distinct, with a partial black annulus. The fringes are much as in *phlogophagus*. There are two forms of *interjacens*, the one larger, with the markings more obliterate, and hence more resembling *umbrosus*, from which it is distinguished by the angulate median shade, and the other smaller and approaching *phlogophagus* in the distinctness of its ornamentation. The angulate median shade and the single and more even series of posterior venular dots distinguish *interjacens*, a Californian species which has been sent me in numbers by Mr. Henry Edwards and Mr. Behrens.

Melicleptria Hoyi, *n. s.*

Body blackish, hairy ; the villosity has a purplish tinge, and is paler beneath. Fore wings triangulate, blackish, overlaid with a sprinkling of pale scales, especially at base and terminally. A rather narrow angulate yellowish-white band crosses the wing at the place of the posterior line. Hind wings yellowish white, with a rather wide determinate black border extending also along internal margin. No discal lunule. Under surface paler, more whitish. Primaries diffusely whitish about the transverse band reflected from upper surface. On secondaries a costal black spot, and the whitish color intrudes on the terminal band at anal angle. Expanse, 22 mil. *Hab.*, Racine, Wis., Dr. P. R. Hoy. The species is very simply and distinctly marked. The specimen is in good condition, but the antennæ are wanting. The generic location may be revised.

Lygranthœcia tumida, *n. s.*

Fore wings light buff-yellow, shaded with olivaceous, with indeterminate markings. The whitish median lines may be made out, angulate, approximate, fusing sub-medially. The ornamentation of primaries recalls the European genus *Clidia*. Fringes checkered, pale, narrowly interrupted with black. Thorax like primaries. Hind wings with unusually broad black borders, leaving a narrow basal space bright yellow, soiled with black at extreme base; a faint line intersects the black border before its inner edge. Fringes whitish. Beneath, bright yellow at base of both wings, which have black exterior broad marginal bands, interrupted at costal. A common black line is hardly differentiated from the marginal bands by a fine streak of pale scales. Fringes pale, interrupted with black on fore wings. Expanse, 20 mil. Colorado, Mr. Tepper and Mr. Neumœgen; also in my own collection.

Lygranthœcia rufimedia, *n. s.*

Allied to *Meskeana*, but the median lines are even, sinuate, much as in *rosei tincta* or *jaguarina*. Fore wings deep olivaceous, with the median space washed with bright red. Lines pale. Terminal space shaded with yellow at and below apices, and again at internal angle. Hind wings black, with two yellow spots as in *brevis*. Beneath much as in *Meskeana*, the black more diffuse. Body yellowish. Expanse, 22 mil. Florida, Mr. Hulst.

SPILOSOMA (Hyphantria) TEXTOR, *Har.*

In the second number, page 14, of the present volume of the Bulletin, I find an article by E. L. Graef on the different species of the moths that have been classed under the genus Hyphantria, and his belief from finding intergrades that there is in reality but one species.

In 1877 I found a nest of the caterpillar of this insect on a young pear-tree, they apparently having just hatched from a single cluster of eggs deposited by a single moth. I took the larvæ and fed them on apple leaves till they were ready to pupate. When they emerged from the chrysalids, as they did in great numbers, I found that I had not only the white Textor that Harris speaks of, but those with from one to quite a number of black spots on the fore wings, all from the same brood of caterpillars. I have now a few reared from Asparagus that have more spots than any I have seen elsewhere, but I have, ever since I reared those varied forms spoken of above, referred all to one species, and called that Textor. If Drury's name is older than Harris's, then that will probably have the first place. Like Mr. Graef, I have for some time seen no very good reason for a generic distinction between this and Spilosoma.

G. H. French.

Carbondale, *Ill.*

NEW PUBLICATIONS.

John L. Leconte, M. D.

Trans. Am. Ent. Soc., VIII, pp. 163–218.

Short Studies of North American Coleoptera.—Describes the new species Dromius atriceps, *La.*—Axinopalpus nigriceps.—Loxopeza testacea (color var. of tricolor), *Tex.*—Amara fortis, *Tex.*—Badister elegans, *Tex.*, B. reflexus, *N. Y.*, *Mich.*, *La.* (with a synopsis).—Haliplus tumidus, *Tex.*—Xenistusa n. g. cavernosa, fossata, pressa, *Tex.*—Leptacinus brunnescens, *Cal.*, nigritulus, *Mich.*, *Can.*, pallidulus, *Cal.*, seriatus, *Mich.*, *Can.*, cephalicus, *S. C.* (with synopsis).—Metaponcus floridanus, *Fla.*—Leptolinus rubripennis, M. & W. St., pusio, *S. C.*—Xantholinus temporalis, *Fla.*, picipennis, *Cal.*, dimidiatus, *Cal.*, gularis, *Mich.*, sanguinipennis, *Pa.*, nanus, *Cal.* (with synopsis).—Lathrobium bicolor, *Mich.*, nitidulum, *Fla.*, *Mich.*, finitimum, *Vanc.*, *Br. Col.*, puncticeps, *Cal.*, subseriatum, *Vanc.*, *Cal.*, othioides, *Or.*, *Mass.*, simplex, *L. Sup.*, *Mass.*, divisum, *Vanc.*, debile, *Mich.*, confusum, *Mass.*, parcum, *Fla.*, ambiguum, M. W. & S. St., ventrale, *Pa.*, *Fla.*, *Kan.*, anale, *Pa.*, *S. C.*, *La.*, pallidulum, *Pa.*, *Fla.*, *Mich.*, *Col.*, lituarium, *Ariz.*, *Tex.* (with synopsis).—Liparocephalus cordicollis, *Cal.*—Stilicus quadriceps, *Cal.*, *Mo.*, *Mass.*, opaculus, *D. C.*, *Tenn.*, *Cal.*, biarmatus, *Mass.* (with synopsis).—Scopæus dentiger, *Mass.*—Sunius (syn. table), Hypotelus capito, *Tex.*—Bryaxis (syn. table) Belfragei, *Tex.*, gemmifer, *Mich.*, radians, *Ills.*, divergens, *Mass.*, trigona, *Mo.*, sagax, *Cal.*, complectens, *Tex.*, *Fla.*, deformata, *Cal.*, tumida, *Tex.*—Entrichites n. g. Zimmermanni, *Dist. Col.* to *Tex.*—Pselaptus n. g. Belfragei, *Tex.*—Scalenarthrus n. g. Hornii, *Ariz.*—Eutyphlus n. g. similis, *Wash.*—Ino reclusa, *Tex.*—Hyperaspis (with syn. table) Bolteri, *Ills.*, cruenta, *Tex.*, discreta, *Mass.*, tædata, *Fla.*, osculans, *Cal.*, gemina, *Ga.*, *Tex.*, postica, *Cal.*, punctata, *Tex.*, tristis, *Col.*—Peploclyptus n. g. Belfragei, *Tex.*—Hister perpunctatus, *Mass.*, Abræus Bolteri, *Cal.*—Hoplia Sackenii, *Cal.*, *Nev.*, dispar, *Cal.*, *Nev.*, hirta, *Nev.*, equina, *Mass.* (with syn. table).—Chætocœlus n. g. setosus, *Tex.*—Cleronomus ornaticollis, *Ohio.*—Dicentrus n. g. Bluthneri, *Cal.*, *Nev.*—Monachus (syn. table).—Diachus n. g. erasus, *Cal.*, æruginosus, *Col.* (with syn. table).—Triachus n. g. cerinus, *Fla.*, vacuus, *Ills.*, *Ks.*, postremus, *Tex.* (with syn. table).—Cryptocephalus (with syn. table) croceipennis, *Fla.*, cribripennis, *Tex.*, castaneus, *Cal.*, defectus, *Tex.*, carinatus, *Ks.*, fulguratus, *Tex.*, tinctus, *Mass.*, *Fla.*, *Ills.*, *Tex.*, striatulus, *Ills.*, *Va.*—Pachybrachys (with syn. table) striatus, *Tex.*, *Ks.*, virgatus, *Ks.*, *Neb.*, dubiosus, *Tex.*, cruentus, *Tex.*, lustrans, *Cal.*, renidens, *Col.*, subvittatus, *Tex.*, turbidus, *Tex.*, brevicollis, *Tex.*—Myodites (with syn. table) Popenoi, *Ks.*, nevadicus, *Nev.*, californicus, *Cal.*, Schwarzi, *Fla.*, Zeschii, *N. Y.*—Nemognatha (with syn. table) punctipennis, *Ariz.*—Diodyrhynchus byturoides, *Cal.*—Rhynchites velatus, *Cal.*—Acalles Hubbardi, *Fla.*—Eisonyx n. g. crassipes, *Tex.*—Mycrocholus erasus, *Ks.*—Barilepton lutescens, *Tex.*, albescens, *Tex.*—Himatium conicum, *Va.*

Canadian Entomologist, XII. p. 126.—Fungoid Diseases of Insects.

Dr. H. A. Hagen.

Canadian Entomologist, XII, 128.

A Mystery in reference to Pronuba yuccasella.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. III. BROOKLYN, SEPTEMBER, 1880. No. 5.

Descriptions of some New Species and Varieties of North American Lepidoptera.

By Herman Strecker.

Colias Hela. Body black, with yellow and greenish hairs. Antennæ pink. ♂ 1 5-8 inches in expanse. Upper surface orange coloured, as in *Hecla* and *Meadii*, with blackish border of both wings plain on inner edge, and same width as in average examples of *Hecla*, *Fieldii*, *Edusa*, and allies.

A small black discal spot on primaries, and an indistinct one with paler centre on secondaries. Under surface greenish, not as dark as in *Hecla* nor as bright as in *Meadii*; disc of primaries inclining to yellowish; base and disc of secondaries darker green than rest of surface. Discal spot on primaries small, whitish, and faintly outlined with black; on secondaries, reddish, saggitate in form, and pupilled with white. Fringes of all wings rosy.

♀ expands 1 13-16 inches. Ground colour somewhat more inclined to yellow than in the ♂. Primaries with costa blackish; a very broad black exterior border enclosing five lemon-yellow spots of various sizes more or less ovate in shape. A large black discal spot. Whole surface of secondaries heavily suffused with black scales, which are densest at and near the apex. A sub-marginal row of almost confluent yellow spots; abdominal border yellow. Discal spot large, saggitate, and orange coloured. Under surface as in ♂, with the additional decoration of a smaller second spot also red with white centre, which joins the discal spot of secondaries at its costal edge.

This is allied to *Hecla*, Lefvr., *Meadii*, W. H. Edw., and *Boothii*, Curt., but is nearer, in all save its greater size, to the first, and may be a variety of it, as is *Christina*, W. H. Edw., of the Labrador *Pelidne*, Bdl. It further differs from the Greenland and Lapland forms of *Hecla* in the shape of the wings, especially in ♂, in the much greater presence of blackish scales on upper surface, and in the absence of the paler green border of under side of secondaries in ♀. Whether these and minor points will hold constant in a series is yet to be seen, and is in all probability doubtful ; the present descriptions are from 1 ♂ and 2 ♀ ♀ ; a few more were taken, but these are all I have had the opportunity of examining.

They were captured by Esquimaux a considerable distance above Fort Churchill on west coast of Hudson's Bay ; with them was also received a very beautiful form closely allied to *Colias Nastes*, which I here describe as

Colias Moina. ♂ size and form of *Nastes*, Boisduval. Upper surface bright brimstone yellow, with the slightest tinge of green ; black markings as in *Nastes*, but much more intense and distinctly defined. Discal spot rather large and deep black. Fringe roseate. Under surface bright pale pea-green, inclining to emerald or verdigris green ; a little pale on disc of primaries. On both wings a row of conspicuous dark-brown or blackish spots run parallel with the exterior margin at the same distance therefrom as is the inner edge of the dark borders on upper surface. A small white discal spot ringed with black on primaries ; a white one on secondaries, which is largely bordered on costal exterior and inner edges with red, brown, or maroon colour, but is open towards the base of wing and emits a pale ray, which extends along within the discoidal cell. Fringes rosy.

♀ same as ♂, with the exception of the upper surface being a trifle paler in colour.

Described from a large number of examples mostly males.

This, which I presume is but a variety of *Nastes*, still differs decidedly from the Labrador examples in the brightness of the yellow colour and the depth and sharpness of the black markings of upper surface ; and beneath in the beautiful light lively colour, which in the typical *Nastes* is dull olivaceous and heavy, and in the prominent row of dark sub-marginal spots which are entirely wanting in the secondaries and only indicated on primaries by a few indistinct dots.

Further, the ♀ of *Nastes* is white or greenish white, whilst in the present form it scarcely differs in its yellow colour from the ♂.

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NOTICE TO ENTOMOLOGISTS.

I have returned from a collecting trip of a year, in Southern California, Western Washington Territory and Mt. Hood, Oregon., with a fine collection of insects of all orders, and particularly of Coleoptera and Lepidoptera. Specimens perfect and correctly named. Terms very reasonable. Full particulars sent by return mail on application to

H. K. MORRISON,
Morganton.
Burke County,
North Carolina.

Erebia Sofia. Expands 1 1-2 inches.

Upper surface dark brown. Primaries crossed by a sub-marginal band of rusty yellow or sienna coloured, divided by the brown nervures and nervules; an indication of the same colour in the discoidal cell. The secondaries have a sub-marginal row of four spots, the two of which nearest the apex are confluent, and the others rather remote from each other. To those acquainted with exotic Lepidoptera, I need only say that this is on the upper side almost a counterpart of *E. Kefersteinii*, Ev., from W. Siberia.

Under surface: Primaries dark rust red, paler within and at the terminal part of the discoidal cell, and with the band as above, but paler in colour; that portion of the surface exterior to this band is brown, as is also the costa. Secondaries brown, not quite as dark as above, the four spots of upper side repeated, but white, with the faintest tinge of yellow instead of the rust colour as above.

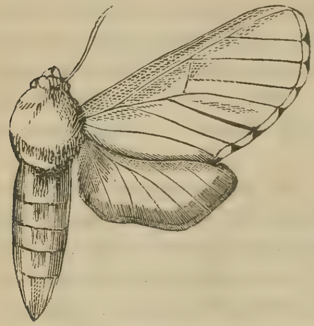
The single example from which this description was taken is presumably a ♀, though the body is in such a hideous condition from the handling of its Esquimaux captor that its sex cannot be with any certainty determined. It was taken, along with the two above described *Coliades*, above Fort Churchill, and sent to Mr. Woldemar Geffcken, of Stuttgart, Germany, from whom I received them.

Erebia Magdalena. ♂ expands 2 inches. Shape of *E. Alecto*, Hub., which it closely resembles throughout. Whole upper surface dark blackish brown, devoid of any mark or decoration whatever Under surface brownish black much as above, but with the inner two thirds of wings a shade darker than the marginal third, but a shade only; this surface is likewise destitute of all ornamentation.

Described from three examples, all males, taken by Prof. E. T. Owen in the summer of 1879 in some almost inaccessible place on the mountains near Georgetown, Colorado. In mus. Strecker.

It was with no ordinary degree of comfort that I received this species, for here the soulless routine work of description need be but of the briefest, and sundry pages of entomological jargon to madden the unhappy student could not be perpetrated even had it fallen into the hands of those ambitious to so amuse themselves.

Sphinx Halicarnie. ♀ expands 2 5-8 inches. Upper surface light fawn or drab gray, slightly darker on top of head, thorax, and costa of primaries than elsewhere; towards and at the exterior margin of primaries somewhat whitish, though insensibly blending into the drab of rest of wing, so as to make no marked difference. A rather short dark-brown streak in the space between the second and third median nervules and some brown on the fringe at termination of the veins, is all the attempt nature has made in the decoration of this moth. The secondaries are light brown, paler at and towards the base, and with the fringe white and brown alternately. Under surface uniform light brown or fawn colour.


Sphinx Halicarnie, Streck. ♀

One example was taken by Rev. Geo. D. Hulst, in Florida, in summer of 1878. In mus. Strecker.

This Sphinx, of which I append a figure in order to exhibit the great breadth of primaries, is without doubt the most remarkable species yet discovered in this country.

Though evidently allied to the *Coniferarum* group, its peculiar bombycid appearance distinguishes it at once from all species yet known. Doubtless, like its nearest allies, it will be found to exist in the larva state on some species of pine.

On Mr. Morrison's Descriptions of North American Noctuidæ.

By A. R. Grote.

I have examined the types of most of the following species described by Mr. Morrison, and they appear to me valid species previously undescribed. I have given the synonyms so far as known to me where the species have been since renamed:

1. *Luceria Burgessi*, Morr., B. B. S. N. S., 109, 1874.
   Referred to *Hadena* in the Check List.
2. *Agrotis claviformis*, Morr., Proc. B. S. N. H., 18, 115.
   This is *Pachnobia orilliana*, Grote, described Can. Ent., 154, 1875, and which should have priority. Mr. Morrison's first description of the species, ibid., 17, 162, could not possibly be identified, and should have no authority.
3. *Tarache obatra*, Morr., Proc. B. S. N. H., 18, 124.
   I have seen the type in Mr. Tepper's collection. It appears to be a species of Spragueia allied to *plumbifimbriata*.
4. *Mamestra rugosa*, Morr., Proc. B. S. N. H., 18, 119.
   I have received a specimen of this species from Prof. Fernald.

5. *Acronycta increta*, Morr., Proc. B. S. N. H., 131, 1874.
6. *Acronycta aspera*, Morr., ibid., 132.
   This is not an *Acronycta*, and has been afterwards described as *Polia diffusilis*, Harvey. Type in Mr. Tepper's collection.
7. *Demas diversicolor*, Morr., ibid.
   Subsequently referred by me to *Hadena*.
8. *Eurois astricta*, Morr., ibid., 135.
   Subsequently referred by me to *Agrotis*.
9. *Polia perquiritata*, Morr., ibid., 136.
   Is an *Agrotis*, and has been since renamed by me *Agrotis Baileyana*. Allied to *A. speciosa* of Europe. From his generic reference the identification of the species was not possible.
10. *Mamestra olivacea*, Morr., ibid., 143.
11. *Dianthœcia modesta*, Morr., ibid., 144.
    Subsequently referred by me to *Graphiphora* (*Tæniocampa*).
12. *Hadena vulgivaga*, Morr., ibid.
    Allied to *H. fractilinea*, Grote.
13. *Segetia fabrefacta*, Morr., ibid., 146.
    Referred by me to *Perigea*.
14. *Orthosia minuscula*, Morr., ibid., 148.
    Referred by me to *Parastichtis*, and subsequently by Morrison to *Hadena*.
15. *Perigrapha semi-aperta*, Morr., ibid., 150.
    Referred by me as the type of *Tricholita*. A second species from California is *T. fistula*, Harvey.
16. *Tæniocampa modifica*, Morr., ibid., 150.
17. *Glœa sericea*, Morr., ibid., 151.
    Subsequently described as *Glæa venustula*. Gr.
18. *Glœa pastillicans*, Morr., ibid.
19. *Scopelosoma napœa*, Morr., ibid., 152.
    Referred by me as the type of *Litholomia*.
20. *Pyrophila glabella*, Morr., ibid., 153.
21. *Pteroscia atrata*, Morr., ibid., 156.
22. *Charadra dispulsa*, Morr., P. Bost. S. N. H., 213, 1875.
23. *Bryophila percara*, Morr., ibid.
24. *Hadena relicina*, Morr., ibid., 216.
    I have not seen the type of this: I have a Texan specimen of a species which seems to me allied to *Burgessi*, and to be the one intended by Mr. Morrison.
25. *Caradrina disticha*, Morr., ibid., 217.
    Referred by me to *Orthosia*. There is some slight doubt that this identification is correct. The species occurs in the West and Southwest, and Mr. Morrison has sent it under another name. But the description agrees quite well.

26. *Tornos robiginosus*, Morr., ibid., 218.
    Referred by Dr. Packard to the *Geometridæ*.
27. *Tarache tenuicula*, Morr., ibid., 218.
28. *Syneda deducta*, Morr., ibid., 220.
    Referred by me as the type of *Cirrhobolina*. I regard *pavitensis* as the female and *incandescens* as an obliterate variety of *deductar*.
29. *Agrotis dilucida*, Morr., Proc. A. N. S. Phil., 55, 1875.
30. *Agrotis brocha*, Morr., ibid., 56.
31. *Agrotis plagigera*, Morr., ibid., 57.
32. *Agrotis redimicula*, Morr., ibid., 57.
33. *Agrotis rileyana*, Morr., ibid., 58.
34. *Agrotis gladiaria*, Morr., ibid., 59.
35. *Hadena inordinata*, Morr., ibid., 63.
36. *Schinia tepperi*, Morr., ibid., 68.
    Made the type of Polenta, Morr., but the genus does not seem to me sufficiently distinct from *Plagiomimicus*.
37. *Heliothis lucens*, Morr., ibid., 69.
38. *Tarache patula*, Morr., ibid., 69.
    This is a *Thalpochares*, and has been renamed by me *T. patruelis*.
39. *Tarache crustaria*, Morr., ibid., 70.
40. *Agrotis montana*, Morr., Ann. N. Y. Lyc., N. H., 94, 1875.
    Referred by me as the type of *Agrotiphila*.
41. *Mamestra curta*, Morr., ibid., 96.
    Belongs to *Anarta*, and renamed by me *A. nivaria;* also redescribed by Morrison as *Orthosia* (!) *perpura* with an erroneous locality.
42. *Mamestra promulsa*, Morr., ibid., 97.
    Referred by me to *Anarta*.
43. *Plusia laticlavia*, Morr., ibid., 98.
44. *Eutricopis nexilis*, Morr., ibid., 102.
    This is a distinct species of *Melicleptria;* there are no grounds for the erection of a new genus so far as appears from the description.
45. *Eucalyptra bipuncta*, Morr., ibid., 104.
    This smaller species does not seem to me generically distinct from *Scolecocampa liburna*.
46. *Agrotis fernaldi*, Morr., P. Ac. N. S. Phil., 429.
47. *Mamestra quadrannulata*, Morr., ibid., 430.
48. *Metahadena atrifasciata*, Morr., ibid., 431.
    I have referred this species to *Homohadena;* no characters are given to warrant a separate genus; from *Oncocnemis*, it differs by the unarmed front tibiæ.

49. *Tæniocampa vegeta*, Morr., ibid., 432.

I have seen this species which appeared to me new, but have had no opportunity to examine it structurally.

50. *Thalpochares carmelita*, Morr., ibid., 434.

51. *Syneda ingeniculata*, Morr., ibid., 435.

52. *Agrotis perpolita*, Morr., P. B. S. N. H., 237, 1876.

53. *Homoglæa hircina*, Morr., ibid., 240.

I have referred this generic division as a group to *Glæa* characterized by the pectinated antennæ.

54. *Homoptera penna*, Morr., ibid., 241.

55. *Agrotis intrita*, Morr., Can. Ent., 7, 68.

56. *Caradrina meralis*, Morr., ibid., 215.

This species is subsequently described by me as *C. bilunata*.

57. *Agrotis lacunosa*, Morr., B. G. S. T., 4, 172.

58. *Agrotis simplaria*, Morr., P. B. S. N. H., 210, 1875.

59. *Agrotis rufipectus*, Morr., Ann. Lyc., N. H., 11, 304.

60. *Hadena congermana*, Morr., C. E., 6, 106.

This species is a *Mamestra*, and has hairy eyes; I have so referred it, Bull. G. S. Terr., 4, 187.

61. *Mamestra assimilis*, Morr., Bull. B. S. N. S., 2, 113.

There is a species of *Hadena* described by Doubleday under this specific name; Staudinger refers it as a synonym of *exulis*. In any event the genera are, I think, sufficiently distinct to allow of the use of the same trivial name.

62. *Morrisonia peracuta*, Morr., B. B. S. N. S., 2, 114.

63. *Lithophane fagina*, Morr., ibid., 115.

64. *Lithophane disposita*, Morr., ibid., 116.

65. *Calocampa curvimacula*, Morr., ibid., 191.

66. *Calocampa germana*, Morr., ibid., 192.

Referred by me to *Lithomia*.

67. *Hadena rasilis*, Morr., P. B. S. N. H., 158, 1874.

This species I had previously regarded as *Elaphria grata*, Hubn. But Hubner's figure, Mr. Morrison thinks, represents *G. oviduca* of Guenee. The species are nearly alike in ornamentation, but there is a great probability that Mr. Morrison is right. In any event, it will be better to retain Mr. Morrison's name for this species, which I found quite common in 1870 in Central Alabama.

68. *Hadena norma*, Morr., Can. Ent., 7, 216.

Described by me afterwards as *Eustrotia mariæ*. The species cannot, I think, be referred to Hadena. Afterwards redescribed by Mr. Morrison as *Lithacodia penita*.

Insects from Infested Twigs.

While at Dr. Leconte's library in the spring of this year, this distinguished entomologist showed me some boxes of infested twigs, pointing out the value of information to be thus gained, viz., the kinds of trees and bushes infested by various insects, the time of the year in which they make their appearance, the length of time they need for their transformation, their natural enemies, hatching from them (Ichneumonidæ), etc. Of course each kind of wood must be kept in a separate box.

Besides this very interesting information, for which a diary should be kept, I do not know of a more convenient and paying method of getting good specimens for the collection and for exchange. In one box, for instance, filled with pieces of a dead wild-grapevine, I took, from May 2d to May 23d, fifty-four specimens of Phymatodes amœnus, by no means a common insect; about a dozen Sinoxylon basilare, from May 14th to June 3d; one specimen of Ichnea laticornis, May5th, and two, May 13th. Out of a box of hickory twigs, during the month of May, I obtained ten specimens of Anthaxia viridicornis and a number of specimens of Leptostylus and Sternidius. The insects, when they emerge, crawl to the top or under the cover of the box, and are thus easily seen. In my opinion the wood should be occasionally moistened. Whoever will try this " wood-chamber " breeding will find it a very interesting pastime—but please keep correct notes, and give them to the entomological public.

W. Jülich.

NEW PUBLICATIONS.

Herman Strecker.

Proc. Davenport Acad. of Nat. Sciences, II, 270.

Descriptions of some Species and Varieties of N. A. Heteroceres.—Describes the new species: Hypoprepia cadaverosa, *Col.*—Arctia geneura, *Col.*, A. quadrinotata, *Tex.* Varieties of Nemeophila Plantaginis, L.—Halesidota ambigua, *Col.*—Schinia gulnare, *Ills.*—On some hybrids between Callimorpha Lecontei and C. interruptomarginata (with plate).—The larva of Samia Gloveri, and differences between the larvæ of the three allied species.

J. L. Leconte, M. D.

Am. Entomologist, III, 236.

The coleopterous parasites of the common hickory.

Ch. V. Riley, Ph. D.

Am. Entomologist, III, 237.

Food habits of the longicorn beetles.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. III. BROOKLYN, OCTOBER, 1880. No. 6.

Description of some New Species of Geometridæ.

By Geo. D. Hulst.

1. Aplodes viridicaria, *sp. nov.*

Expands 14 lines. Head white; antennæ dull white; palpi short.

Body: thorax light green above, white below; abdomen white.

Fore wings: costal edges white, body of wings clear pea green, somewhat striated with white, and crossed by two white lines; the first, beginning at costa, one-fourth the length of the wing from the base, straight, and meeting the posterior margin at the same distance from base, forming with the edges of the wing an equilateral triangle; the second, beginning at costa, one-fourth of the length of the wing from the apex, straight, running as nearly as possible parallel with outer edge of the wing, and so at the posterior margin approaching the first line. Outer edge somewhat rounded; fringe white.

Hind wings: faintly green, marked with two white lines; the first rounded, beginning close to the base, and striking the posterior margin further out. The second broader, merging somewhat with the ground color of wing on outer edge. The green is more pronounced between the two bands than elsewhere on the hind wings; fringes white.

Underneath as above; green less pronounced, most distinct on the fore half of the front wings; surface somewhat lustrous; lines somewhat indistinct.

Four specimens. Colorado.

Near *Synchlora tricoloraria* and *Aplodes rubrifontaria,* but without any red or ochreous color, with white lines broader, the inner one on the fore wing straight, the outer further from external margin, and the inner one of hind wing much more curved and less parallel with the outer.

2. Cidaria erythrata, *sp. nov.*

Expands 10 lines; head, antennæ, and body dark reddish brown.

Wings all bright chestnut red, the fore wings a little darker than the hind wings. Discal spot existing indistinctly on all wings.

Fore wing rounded at apex and on outer margin, and with an indistinct dark waved line running across it, reaching the posterior margin close to outer angle. Very faint indications of another line half way between this one and the base.

Hind wings with dark line two thirds distant from base, waved, nearly parallel with exterior margin. All fringes concolorous with wings.

Beneath as above, with color a little softened.

1 ♀. Colorado.

3. Cidaria luteolata, *sp. nov.*

Expands 14 lines.

General color of head, body, and wings a light clay brown. Antennæ darker toward ends. Palpi short. Body slender, a little darker on back. Wings without discal spot above, marked with five or six faint lines made by the deepening and lightening of the ground color. The most prominent are one darker, somewhat wavy, extending from costa of fore wing parallel to exterior edge of wing, and continued across the hind wing; another sub-marginal, parallel to the last, lighter than the ground color. Surface smooth; fringes long, same color as the wing.

Underneath: color somewhat lighter, lines a little more decided, discal spot apparent on each wing, base of fore wings sprinkled with dark atoms.

Two specimens. Colorado.

4. Thamnonoma pervolata, *sp. nov.*

Expands 13 lines.

Head and wings dark ashen; body ashen above, white below.

Fore wings: costæ very narrowly edged with black; costal space marked with four dark spots, the first close to the base, undecided, the middle two nearest each other and larger. The exterior one succeeded below on the wing by an undecided black band not reaching the costa, fading away before reaching posterior margin. External edge of wing dotted with black forming a broken line. An indistinct dark spot on posterior edge of wing. Surface smooth, sublustrous.

Hind wings with indistinct discal spot, outer edge marked with very narrow broken line; interior margin with white edge.

Underneath: ground color much as above, with outer third of all wings darker than the rest. All wings with discal spot.

Five specimens. Colorado.

5. Macaria respersata, *sp. nov.*

Expands 15 lines.

Head light gray; palpi reddish; body light gray.

Wings the same color, thickly sprinkled with brownish atoms which become nearly or quite connected along the costæ.

Fore wings crossed with three distinct brown lines, beginning equally distant from each other on costa, and approaching each other at posterior margin; the first and second more closely than the second and third. Nearly half way from costa across the wing the outer line deepens in color to a black spot, and just beyond this are two black dashes very close to each other and lying lengthways at right angles with the line. Middle line with a prong starting out from it near the costa and extending about a line towards exterior angle; this prong represents the discal spot.

Hind wings with discal spot decided; a brown line running half way across wing from the inner margin; outer edge slightly angulated.

Underneath, as above, with discal spots more distinct.

Ten specimens. Colorado.

This species seems subject to considerable variation in the definiteness of the lines crossing the wings.

6. **Rumia baltearia**, *sp. nov.*

Expands 14 lines.

Body and wings sulphur yellow, lighter towards base on hind wings.

The fore wings have a broad band of brown occupying one-fourth their area in length; this is angulated outwardly on its inner margin, and waved outwardly and irregularly on its outer margin. It extends at an almost uniform width half way across the wings, then suddenly becomes reduced in width, and thus extends to posterior margin.

Hind wings with indistinct line of brown.

Four specimens. Minnesota and Colorado.

This is undoubtedly near to *Rumia sulphuraria*, Pack., and I am not confident it is not a variation of that species; but the broad brown band gives it a decided individuality of appearance, and I have been able to see no connecting intergrades.

7. **Marmopteryx dryadata**, *sp. nov.*

Expands 14 lines.

Antennæ and palpi light russet. Body somewhat pronounced russet; anterior part of abdomen white beneath; surface of wings smooth and silky, generally light russet in color. The color more pronounced on costal area and outer edges than on discal area, where it fades nearly to white.

Fore wings with a broad, indistinct, whitish band, beginning about three-fourths of distance from base to apex, and running parallel to the outer edge till it is lost in the discal area. Another very indistinct band begins at the apex, and, running inwardly, extends nearly to the previous line, forming an oblong patch. Fringes checkered with white and brown.

Hind wings with broad, bent, indistinct white band about the middle of the wing and an indistinct white spot at middle of basal area. Fringes checkered with white and brown. All the wings narrowly edged with reddish brown on external margin.

Underneath: fore wings, ground color as above, fading in the middle area and towards posterior edge to white, and on the anterior half and the apical area becoming reddish ; bands as above. Hind wings russet, striated very heavily with red, except on portion from center to inner edge, and between base and middle white line where they are brown. Central white band and basal spot distinct and of clear white.

Five specimens. Colorado.

8. **Lozogramma bifilata**, *sp. nov.*

Expands 13 lines.

Antennæ reddish ; palpi deep reddish brown. Thorax robust ; thorax and abdomen ochreous. Wings, ochreous red, the hind wings lighter toward the base.

Fore wing: costæ lined with reddish from base to apex ; discal spot small but distinct. Two straight reddish lines, beginning so they divide the costal edge into nearly equal parts, run across the wings parallel with each other, and as nearly as possible parallel with the outer margin. A little beyond the outer line, and reaching thence to the edge, is a band darker than the ground color of the wings. Apex with dark point ; outer edge rounded, very slightly falcate. Fringes reddish brown.

Hind wings with faint indication of band on inner edge.

Underneath: reddish brown, the red color brighter and more apparent. The outer line of fore wings faintly produced, discal spots very small and on hind wings only.

Three specimens. Colorado.

9. **Acidalia minutularia**, *sp. nov.*

Expands 6 lines, and is one of the smallest, if not the smallest, of our *Geometridæ.*

Body and wings a bright, clear white. Discal spots distinct black.

Fore wings : costa narrowly edged with brown. One-third distance from base of wing to apex is a somewhat broken and variable line of indistinct brown; three-fourths the distance to the apex, and below the costa is an irregular patch of brown and black, and another on the posterior margin near the inner angle. Along the outer edge of the wing is a line of black points ; fringes white.

Hind wings : outer one-third with indistinct striations ; edge with line of black points.

Underneath : wings white ; fore wings brown along the costa ; all with discal point distinct, and edges marked as above with line of black points.

Five specimens. Taken in the pine woods near Enterprise, Fla. Found among grasses. Resembles in shape though smaller, and without its band or color, the *Acidalia* (Eois) *gemmata* of Packard. Since writing the above, Mr. Kœbele has brought the species from Tallahassee, Fla.

10. Eupithecia tenuata, *sp. nov.*

Expands 8 lines.

Head and palpi white. Body gray. Wings many banded.

Fore wings: base ashen, succeeded by a broad band of varying white and reddish; this succeeded at the middle of the wing by a rather broad ashen band curved outwardly; then, following the same line of curvature, but narrower, one whitish, then another reddish ashen, then a narrow one of white, then one ashen, reaching nearly to outer edge of wing, and scolloped on its outer margin. Extreme edge and fringe white.

Hind wings with same bands, but central ashen one not so broad, and basal one not so distinct. Discal spots distinct on hind wings.

Underneath gray. On all wings a band of whitish, a little beyond the middle somewhat broad, and rounded with the wings.

One specimen. Colorado.

11. Accidalia quæsitata, *sp. nov.*

Expands 11 lines.

Head, body, and wings dull brown. Antennæ slightly pectinated.

Fore wings crossed by three dark wavy lines: the first, one-third distance from base, rounded; the others, one-third beyond, close to and parallel with each other and the outer margin of the wing. The outer line is edged on the outside faintly with white. A faint white line beyond this and near the outer margin. Border of wing slightly edged with whitish. Fringe brown.

Hind wings crossed by the two outer brown lines of fore wings continued, wavy, rounded, and parallel to each other. Border marked with narrow black line; fringe brown.

Underneath: color much as above, the outer dark line only present on fore wings, preceded and succeeded by whitish. Both lines evident on hind wings. Fringes somewhat checkered with light and dark brown.

One specimen. Colorado.

New Species of Moths.

By A. R. Grote.

Hypopta Bertholdi, *n. sp.*

♂ ♀. Silvery gray, shaded with fuscous gray. A blackish streak at base, below the sub-costal vein. Median vein narrowly blackish, the blackish shade becoming diffuse outwardly between the median nervules. A faint dotted line at the extremity of the nervules before the fringes, which are faintly interrupted with fuscous. Head and thorax fuscous gray. Secondaries fuscous gray; beneath washed with fuscous. The pre-apical fuscous dots at the extremities of the sub-costal veins above are repeated beneath. Length of primary, 17 mil.

Colorado. Mr. Berthold Neumoegen.

This species is the first American form described, and it differs markedly from the European in Mr. Hy. Edwards's collection.

Heliophila patricia, *n. sp.*

Size small. Fore wings yellowish buff. A silvery-white stripe on the median vein extending on vein 4. Above this a dusky stripe, from the base outwardly to near the margin. Veins and costal edge whitish. Thorax buff. Hind wings white. Beneath whitish. *Expanse*, 29 mil.

Hab. Colorado. Coll. of Mr. Tepper.

A slender species allied to *Heliophila prægracilis*, Grote, Bull. U. S. Geol. Surv., 3, 119, but differing by the dusky stripe along the middle of the fore wings and the silvery median vein.

Hadena tortilis, *n. sp.*

Form rather stout ; eyes naked : tibiæ unarmed. Ornamentation vivid, and recalling that of *Hyppa xylinoides*. Gray, shaded with black, white, and ochery. Collar with a faint line. Sides of the tegulæ black and white striped. A black basal stripe, shaded above with a white ochre-stained line. Inner line with two shorter upper teeth, the lower with its upper edge strongly shaded, and two very large teeth below the median vein. The line is white, with a blackish outer following line. Orbicular pyriform, oblique, white, with a blackish central shade, and black-ringed. Reniform upright, whitish gray, moderate, black-ringed, with faint gray internal annulus. Median space slightly ochery on the cell beyond the reniform and inferiorly over the claviform, which is narrowly outlined in black. Posterior line dentate, white, with a black internal following line. At the sub-median space it nearly meets the wide tooth of the anterior line, and here is a short connecting black dash. Sub-terminal line a series of four black dashes, succeeded by three pale cuneiform marks on the interspaces between the median nervules. Fringe dark gray, narrowly interrupted by white streaks at extremity of veins. Hind wings blackish, the veins darker, and with whitish interlined fringes. Abdomen tufted at base. Beneath, gray, irrorate, with small discal points and vague common line. *Expanse*, 42 mil.

Hab. Washington Territory. Coll. of Mr. Tepper. Differs from *longula* by its stouter body, brighter colors, and more deeply dentate anterior line.

Gotytodes dulciaria, *n. sp.*

♂. The ♂ antennæ are plumose, but the branches are shorter than usual. Size of *uncanaria*. Fore wings uniform olive ochre with designs of silver white. The two median bands meet as usual above internal margin. On the inside, next the median field of the wing, the edge of the band is even, not toothed; the bands approach at median vein; the outer band is projected on median vein. Beyond the outer band the white color extends along the veins, forming a succession of white spots. The sub-terminal band is narrow. The fringes are distinctly blackish and white checkered. There is a white elongated patch on the cell before the inner band; an echinate white spot in the place of the discal mark; a white streak on the sub-median fold, and the median vein above it is touched with white. These white spots on the median space are more numerous than in *trilinearia*, which this species is nearer in ornamentation than *uncanaria*, but there is no furcation of the outer band, which has caused Dr. Packard to describe *trilinearia* as having two sub-marginal lines; this furcation seems to be really the transverse discal spot. In *dulciaria* the narrow sub-marginal band becomes attenuate superiorly. It is outwardly projected opposite the cell, and it is partially resolved into distinct lunulate spots. The white bands of the primaries are all edged and brought into relief by darker lines. The inner band is connected with the base by white scales along median vein. Hind wings whitish, reflecting from beneath the double incomplete dusky bands which are there distinct. The primaries beneath reflect the markings of the surface. Abdomen whitish, with a dusky stigmatal stripe. Length of primary, 18 mil ; length of body, 12 mil.

Hab. Colorado. Mr. Neumoegen.

This species is brighter and prettier than its allies, from either of which it is easily distinguished.

Phasiane curvata, *n. sp.*

♂ ♀. The ground color is dirty whitish, much speckled, and shaded with fuscous. The median lines are thick and black. The inner line is thick from internal margin to the middle of the wing, where it is angulated, and above which it is linear to costa. The median shade is also thick and black inferiorly, where it runs near the inner line, nearly touching it and fusing with it on the median vein divaricating thence to internal margin. It is curved and linear to sub-costal vein, crossing the black discal point, thence angulated to costa. Outer line thick and black, evenly curved until opposite cell, where it fades away, is here bent, and becomes again evident on costal region. It is followed inferiorly by a narrow yellowish line. Sub-terminal space fuscous. Terminal space again whitish, speckled. A terminal broken black line. Hind wings ashen, speckled with indications of three transverse lines marked on internal margin. A black terminal line, slightly lunulate, more or less interrupted. Fringes with a white basal line, ashen, marked with dashes, somewhat dentate on secondaries. Beneath the costa of primaries is somewhat ochrey ; the wings are shaded with fuscous and white. Length of primary, 15 mil.

Hab. Nevada and Colorado. Dr. Bailey, Mr. Neumoegen.

This form differs, by the curved median shade, which is distinct inferiorly, and nearly touches the anterior line in median vein. It somewhat resembles *nigrofasciata*, but the outer band is evenly inwardly curved inferiorly where *alone* it is thick, black, and distinct, while the species is larger.

Rhododipsa volupia, Grote, Bull. U. S. Geol. Surv., 3, 797.

Head and thorax dark yellow. Fore and hind wings bright crimson. Primaries with the median lines propinquitous, irregularly toothed, yellowish white, not very distinct. A yellowish white discal spot; the sub-terminal line of the same color runs very near the external margin, twice bent. The very narrow terminal space again crimson before the pale, yellowish fringes which are faintly interlined and similar on both wings. Beneath, the wings are crimson, with the secondaries shaded with pale, as also the costal edge of primaries. Legs and under surface of thorax yellow ; abdomen red beneath. *Expanse*, 26 mil.

Texas, June 13th. Belfrage, No. 740. Colorado.

This species is probably the *Rhodophora volupia* of Fitch, whose description is sufficiently conflicting to prevent certainty. It is not a *Rhodophora*, and the above determination need not be changed in case Fitch's species proves different.

Toxocampa Victoria, Grote, Bull. B. S. N. S., 2, 163, 1874.

The only described species of the genus in North America. A considerable number of specimens have been taken in Colorado by Mr. Neumoegen. The reniform is variably distinct, and the specimens are generally separable into two varieties. One in which the tone of the primaries is more ochery and the reniform is black, forming a velvety L behind, and broken into black dots outwardly; the strigæ on the wings less noticeable. The outer form is colored like the type with the reniform brown. Both forms differ slightly from the type by the sub-terminal shade being evenly inwardly oblique until opposite the cell, without the slight sub-costal sinus. The resemblance is otherwise so great that I am unprepared to admit the idea that the Colorado specimens belong to another species.

Capture of Terias Nicippe on Long Island.

On August 8th I took, at Glencove, L. I., two specimens of *Terias Nicippe*, Cramer, one male and one female. My attention was drawn to them by my friend Mr. James Price, who during the week previous had captured about a dozen specimens. This is the third time that I have observed this Southern species on Long Island. The specimens are fresh and well marked, and the females have rather more black on the upper side of secondaries than the majority from the Southern States. Fred Tepper.

NEW PUBLICATIONS.

Geo. H. Horn, M. D., is publishing in the *Trans. Am. Ent. Soc.*, p. 219 ff., an extensive

Synopsis of the Silphidæ of the U. S. with Reference to the Genera of Other Countries (with plates), in which he describes the following new genera and species: Pelates, *n. g.*—Pinodytes, *n. g.*—Platycholeus, *n. g.*—Choleva egena, Ch. decipiens.—Prionochæta, *n. g.*—Ptomaphagus nevadicus.—Colon paradoxum, Hubbardi, celatum, putum, pusillum, thoracicum, asperatum, nevadense.—Hydnobius strigilatus.—Anisotoma humeralis, A. valida, A. difficilis, A. ecarinata.—Isoplastus, *n. g.*, fossor.—Liodes Blanchardi, L. obsoleta, L. geminata, L. confusa. —Agathidium dentigerum, A. californicum, A. sexstriatum, A. bistriatum, A. estriatum.—Clambus semilunum.

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3. *americanus*. Dej, Spec. III, 392. Tex. Fla. La.—15 mm.
4. *orbatus*, Newm. Ent. Mag. V, 386. Ga. Ala. Mo. Neb. —16-17 mm.=*convivus*, Lec. Journ. Ac. Phil. II, 229.
5. *Engelmanni*, Lec. Journ. Ac. Phil. II, 228. Tex. West. —18 mm.=*vagans*, (small var.) Lec. Ann. Lyc. IV, 349.—15 mm.
6. *nonnitens*, Lec. Proc. Am. Phil. 1873. p. 225. La. Tex.—18 mm.
7. *gravidus*, Hald Proc. Ac Phil. 1853. p. 361. Tex. Ala.—20–22 mm.
8. *heros*, Say. Journ. Ac. Phil. 1823. p. 145. Ark. Tex.—22–28 mm.
9. *torvus*, Lec. New Spec. I, 9. Kans. Neb.—19 mm.
10. *colossus*, Lec. Ann. Lyc. IV, 343. Mo. Nebr. La.—16–22 mm.
11. *sodalis*, Lec. Ann. Lyc. IV. 349. Pa. Io. Tex. Ills. Mo. Ks. O. Ten.—15–17 mm.=*fatuus*, Lec. Journ. Ac. Phil. 1852.=*corax*, Lec. Ann. Lyc. IV, 347.=*orbatus*, Lec.
12. *furtivus*, Lec. Journ. Ac. Phil. 1852. p. 233. Mich Ohio. Pa. Md.—15 mm.
13. *Sallei*, Lec. Proc. Acad. 1873. p. 319. Tex. Ks.—24 mm.
14. *substriatus*, Lec. Ann. Lyc. IV, 344. Mo. Tex. N. Mex.—12 mm.=*latebrosus*, Lec. Journ. Ac. Phil. 1852. p, 232.
15. *constrictus*, Say. Journ. Ac. Phil. III, 147. Ark. Ks. Nebr. N. Mex. — 12 mm. =*ovipennis*, Lec. Ann. Lyc. IV, 345.
16. *incisus*, Lec. Ann. Lyc. IV, 345. Ks. Neb. Mo. Dak. Ark.—12 mm.=*abdominalis*, Lec. ibid. 347 =*lixus*, Lec. ibid. 346.
17. *vinctus*, Lec. Journ. Ac. Phil. 1852. p. 232. Ga. Ten,—11 mm.
18. *unicolor*, Say. Trans. Am. Phil. II, 40. Ga. Md. N.Y. D.C.—19 mm.
19. *rotundatus*, Lec. Journ. Ac. Phil. 1852. p. 230. Ga.—19 mm.
20. *spoliatus*, Newm. Ent. Mag. V, 386.—16 mm.=*Brevoortii*, Lec. Ann. Lyc. IV, 352. Ala.
21. *acutus*, Lec. Journ. Ac. Phil. 1852. p. 231. La. Fla.—10 mm.=*ovulus*, Chaud.
22. *obsoletus*, Say. Trans. Am. Phil. IV. 424. Tex. Fla. O. Ill.—10–12 mm.
23. *lævipennis*, Lec. Ann. Lyc. IV, 354. Ga. Fla.—10 mm.
24. *approximatus*, Lec. Ann. Lyc. IV, 354. Pa. D.C.—12 mm.
25. *morio*, Dej. Spec. III, 302. Fla.—12 mm.
26. *faber*, Ger. Ins. Spec. nov. p. 23. Fla. (N.Y?)—15–16 mm.

F.G.S.

LOPHOGLOSSUS *Lec.*

Posterior tarsi obsoletely grooved on the outer side of the first joint; prosternum flattened at tip, but not margined; prothorax strongly margined, basal foveæ deep, hind angles not carinate; elytra feebly sinuate at tip, marginal stria single, scutellar stria long, dorsal punctures three; metathoracic episterna long.

Bull. Brooklyn Ent. Soc. Oct. 1880.

Differs from Pterostichus § 3, G, (Omaseus), chiefly by the prothorax more strongly margined, hind angles not carinate and by the ligula being obtusely carinated for its whole length; the last character being the only one which for convenience may be assumed to have generic value. (Leconte, Proc. Ac. Phil. 1873, page 316.)

A. Hind angles of prothorax rectangular, sides sinuate towards the base; middle tibiæ of ♂ armed with a subapical tooth on the inner side, more or less distinct, and an apical process.

a. ♂♀ not very brilliant, elytra of ♀ dull.

Larger, sides of prothorax scarcely sinuate behind; middle tibiæ of ♂ with an acute, apical process, and obsolete subapical tooth. **1. Haldemani** Lec.

Large, sides of prothorax distinctly sinuate towards the base; middle tibiæ of ♂ with an obtuse subapical tooth, and a large acute apical process. *complanata*, Dej. **2. tartaricus** Say.

b. ♂ ♀ moderately and equally brilliant; sides of prothorax distinctly sinuate behind; middle tibiæ ♂ with an acute subapical tooth, apical process wanting. **3. strenuus** Lec.

c. ♂♀ very brilliant, as if varnished; sides of prothorax distinctly but less strongly sinuate, middle tibiæ of male with acute subapical tooth and feeble obtuse apical process. *a.* Hind angles of prothorax less prominent, *canadensis* Chaud. **4. scrutator** Lec.

B. Hind angles of prothorax obtuse. sides more widely reflexed behind; elytra ♂ dull. middle tibiæ without subapical tooth and but feeble apical process. **5 gravis** Lec.

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2. *tartaricus*, Say. Trans. Am. Phil. II, 44. South—20mm.=*complanatus*, Dej. Spec. III, 281.
3. *strenuus*, Lec. Journ. Ac. Phil. II, 249. N. Y.—20 mm.
4. *scrutator*, Lec. Ann. Lyc. IV, 242. Can.—15 mm.=*canadensis*, Chd.
5. *gravis*, Lec. Proc. Ac. Phil. 1873. p. 316. Pa? —19 mm.

HOLCIOPHROUS,

(Synoptic table by Horn.)

Thorax much narrowed to base.

Last ventral segment of ♂ with strong carina .... **1. ater.**

Thorax nearly square.

Last ventral segment of ♂ obtusely carinate .... **2. serripes.**

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1. *Holc. ater*, Dej. Spec. III, 339. Cal. Or. Wash Terr.—22–28 mm.
2. *serripes*, Lec. Trans. Am, Ent. Soc. V, 169. Cal.—15.3–18 mm.

DICAELUS, *Bon.*

This genus contains a number of large species, usually pure black, but some of them are of a beautiful violet or bronzed purple; found only East of the Rocky Mountains under stones or pieces of wood.

We owe the following table to the kindness of Geo. H. Horn, M. D.

Thorax distinctly narrower at apex than at base ...... 2.
Thorax as wide or wider at apex than at base ...... 12.
2. Thorax at middle of margin with one setigerous puncture ...... 3.
  Thorax at middle of margin with two setigerous punctures ...... 11.
3. Elytra without striæ, simply with rows of punctures .... **1. lævipennis,** Lec.
  Elytra striate ...... 4.
4. Intervals not interrupted ...... 5.
  Intervals interrupted by ocellate punctures ...... **10. sculptilis,** Lec.
5. Intervals equal ...... 6.
  Intervals alternately broader and more convex ...... 10.
6. Striæ not punctured ...... 7.
  Striæ very distinctly punctured ...... **12. crenatus,** Lec.
7. Large species, transverse basal impression distinct ...... 8.
  Smaller species, disc of thorax nearly flat ...... **13. ovalis,** Say.
8. Form elongate, margin of thorax reflexed posteriorly .... **15. ambiguus,** Ferte.
  Form broad, margin of thorax not reflexed posteriorly 9
9. Surface black
    Elytral intervals broad and regularly convex, humeral carina very long **2. costatus,** Lec.
    El. intervals narrow and more suddenly convex, humeral carina one third the length of elytra ...... **3. dilatatus,** Say.
    El. intervals moderate, flat; form depressed, carina long **4. planicollis,** Lec.
  Surface cupreous or brassy ...... **5. splendidus,** Say.
  Surface purple, form more elongate ...... **6. purpuratus,** Bon.
10. Intervals feebly alternating, humeral carina moderate .... **11. furvus,** Dej.
  Intervals very decidedly alternating in width and elevation, carina long.
    The intervals smooth, impunctate
      Humeral carina moderately elevated, acute near the base only **7. quadratus,** Lec.
      Humeral carina very long and more elevated, acute in the entire length **8. carinatus,** Dej.
    The narrower intervals distinctly punctulate, the humeral carina moderately elevated ...... **9. alternans,** Dej.
11. Form moderately elongate, intervals equal, feebly convex, stria sometimes finely punctured, carina moderate ...... **14. elongatus,** Bon.
12. Thorax decidedly narrower posteriorly; surface scarcely shining, carina short ...... **16. teter,** Bon.
  Thorax nearly square, not narrowed behind; surface shining, carina almost entirely wanting ...... **17. politus,** Dej.

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2. *costatus*, Lec. Class. Carab. p. 389. Tex.—22–25 mm.
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  =*Dejeanii*, Dej. Spec. V, 687.=*quadratus*, Ferte. Ann. Fr. 1851. p. 277.

4. *planicollis*, Lec. Ann. Lyc. IV, 327. Ga.—24 mm.
5. *splendidus*, Say. Trans. Am. Phil. II, 68. Tex. Neb. Ks. La. Mo.—18–25 mm.
    =*decoloratus*, Lec. Ann. Lyc. IV, 325.
6. *purpuratus*, Bon. Mem. Ac. Torin 1813. p. 447. N.Y. Pa. Fla. La. Mo. Ill.–20-25 m.
    =*chalybaeus*, Dej. Spec. V, 683.=*confusus*, Lec. Ann. Lyc. IV, 324.
    =*iricolor*, Lec. ibid. IV, 326.=*violaceus*, Bon. Mem. Ac. Tor. 1813. p. 447.
    =*cyaneus*, Dej. Spec. V, 686.
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10. *sculptilis*, Say. Trans. Am. Phil. II, 68. Mo. Ks. O. Ills. D.C. Md.—18–20 mm.
11. *furvus*, Dej. Spec. II, 388. Mo. Fla. Ky. Ohio.—16 mm.
12. *crenatus*, Lec. Ann. Lyc. IV, 389. La. Tex.—15 mm.
13. *ovalis*, Lec. Ann. Lyc. IV, 327. Pa. Md. D. C. Ill. Ohio. Tex.—15 mm.
14. *elongatus*, Bon. Mem. Ac. Tor. 1813. p. 447. N. Y. Ills. Md. D.C. La. Tex. 15-18 m
    =*simplex*, Dej. Spec. II, 389.=*obscurus*, Lec. Ann. Lyc. IV, 329.=*opacus*, ‡Lec.
15. *ambiguus*, Ferte. Rev. Zool. 1841. p. 48.. Ann. Fr. 1851. p. 277. N. Y. Pa. Mo. Ill. D.C.—20–22 mm=*opacus*, Ferte, ibid. p. 43, Ala.=*reflexus*, Lec. Ann. Lyc. IV, 330. Pa.=*turbulentus*, Lec. New. Spec. Col. I. 12. Mo.
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17. *politus*, Dej. Spec. II, 391. N. Y. Penn. D. C. Fla.—12–15mm
    =*Leonardi*, Harris. New Engl. Farmer. 1828. Ga.

DIPLOCHILA, *Brull.*

Black, smooth species of medium size living under stones on wet places.
(Synoptic table by Geo. H. Horn, M. D.)

Hind angles of thorax distinct
  Thorax broad, base broader than apex; outer striæ of eyltra feeble **1 laticollis,** Lec.
  Thorax less transverse, broadest at middle, base scarcely broader than apex, outer striæ distinct. . . . . **2. impressicollis** Dej.
Hind angles obtuse
  Outer striae of elytra feeble. . . . . **3. obtusa,** Lec.

———o———

1. *laticollis*, Lec. Ann. Lyc. IV, 319. N. Y. Ills. Mich. Neb.—13–15 mm.
    =*major*, Lec. l. c. 318. (a large Southern var. 18 mm. from La. Tex.)=*assimilis*. Lec. Proc. Ac. Phil. II, 51. Ann. Lyc. IV, 320.
2. *impressicollis*, Dej. Spec V, 682. Lec. Ann. Lyc. IV, 319.
    =*striatopunctatus*, Lec. Proc. Ac. Phil. II, 50. N.Y. Mich. Ill. Wash Ter.—17mm
3, *obtusa*, Lec. Ann. Lyc. IV, 320. Ills. Nev. Kans.—12 mm.

LICINUS, *Latr.*

L. silphoides, Fab. Syst. El. I, 190.—This Insect rare in Europe has also been found near Boston, Mass. Length 16mm. Black opaque; elytra striate punctate, intervals somewhat rugose with single larger punctures. Thorax rounded at the sides, excavate at base and apex, side margin not reflexed. Mentum without tooth, labrun truncate, last joint of palpi seceuriform. Anterior tarsi of ♂ with 2 dilated joints.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. III. BROOKLYN, NOVEMBER, 1880. No. 7.

Notes upon the Genus Catocala, with Descriptions of New Varieties and Species.

By Henry Edwards.

It has long been my intention to publish as exhaustive a monograph as possible of this somewhat puzzling group, and to present colored figures of all the known forms, but, as a work of this character cannot be made complete without access to the various collections throughout the country, it must of necessity involve considerable labor and more time than has hitherto been at my disposal ; but I hope at no distant day to be in a position to announce that my plan will be carried into effect. In the mean time, I may briefly state that it is my unalterable conclusion that every form bearing distinctive characters, whether to be known hereafter as a variety or as a species, should be recognized by a special name, and, though in the present instance I need not more fully enter into my views upon this subject, I am of the opinion that, in the adoption of such a course, much confusion will be avoided, and a better understanding of the genus we are now considering will ultimately be reached. Upon this ground, I therefore offer the following descriptions, adhering, as I have always done, to the names of the female characters of Shakespeare for those of the new forms of Catocala which come under my notice.

In noting the species and their varieties I have followed the order of Grote's check-list.

Cat. Lachrymosa, Guen.

Var. **Paulina,** Hy. Edw.

A suffused and very handsome form of C. lachrymosa, bearing the same relation to it that C. Scintillans does to C. Innubens. The whole of the primaries is deep brownish black, with the exception of a space along the internal margin, reaching to the t. p. line, and a rather broad posterior margin, which are whitish gray, with black irrorations. In other respects exactly resembling C. Lachrymosa.

I am indebted to Dr. James S. Bailey of Albany for the opportunity to examine this very beautiful insect, which is certainly one of the handsomest of our black-winged forms. It has been several times taken in Ohio by Mr. C. Dury.

Type, coll. Dr. Jas. S. Bailey.

Cat. Relicta, Walk.

Var. **Phrynia,** Hy. Edw.

I apply this name to those examples in which the primaries are so *universally* dotted with black atoms as to give them a grayish appearance. The lines are very distinct, and, though there may be what are called "intergrades" to be found in a large series of C. Relicta, I believe that any number of examples may be grouped into three forms, one of which is now presented. The type of Walker is that in which the primaries are largely covered with white, the third form being the following.

Cat. Relicta, Walk.

Var. **Bianca,** Hy. Edw.

In this the base of the wing and the space between the t. p. and the sub-marginal lines are always clouded with black, sometimes very heavily exhibited. The median band of secondaries, too, has in this form an occasional lilac tint, like that of C. Fraxini of Europe. Mr. A. Allen, of Orono, Me., from whom I have received many kindnesses, says, in a recent letter, "Relicta is rare here, no more than eight or ten examples having been taken in so many years; these are of the usual whitish color, except one pair, ♂ ♀, taken by myself at sugar, September 8, 1878. They were flying in company. Does not this indicate that the variety is so near a species that they choose their mates from their own kind?" The synonymy of C. Relicta will stand thus:

C. Relicta, Walker, white form.
" var. Phrynia, Hy. Edwards, gray form. } Types, coll. Dr. Bailey
" var. Bianca, Hy. Edwards, black form. } and Hy. Edwards.

Cat. Nebraskæ, Dodge, is **Cat. Luciana,** Hy. Edw., the latter having been published in November, 1874, and the former in January, 1875.

Cat. Californica, W. H. Edw.

I am inclined to believe that the forms allied to this species want careful revision, and that I am myself responsible for some errors in referring examples to this species which may have belonged to another; but I hope very soon to have in my possession all the types of the western forms, and will then correct these mistakes.

Cat. Walshii, Edw.

The specimens from Colorado have the primaries of a much lighter and more olivaceous shade than those from Kansas, Texas, and New Mexico, the latter having a blacker tint.* I can, however, discover no other difference.

Cat. Unijuga, Walk.

A very small and strongly marked example of this species was sent to me by Prof. Lintner, of Albany, who raised it from a larva found by him near that city. Its expanse of wing is only 2·30 inch, the average size of C. Unijuga being about 3 inches. The gray of the primaries is lighter than usual, and the crimson of the secondaries very bright and vivid.

Cat. Meskei, Grote.

Whether this form will ultimately prove to be a variety of C. Unijuga, I am unable to tell, but it may always be distinguished by the narrow median band of secondaries terminating in a hook. The type is at present in my possession, and I have seen three other examples, exactly agreeing with it in these characters, so that C. Meskei will hold its own as a good variety, if not a species.

Cat. Beaniana, Grote.

The type of this is also in my possession, kindly loaned me by Mr. Grote. It is nearer to C. Unijuga than to any other form, and does not in my mind approach C. Briseis, to which Mr. Hulst in his recent catalogue refers it.

Cat. Rosalinda, *n. sp.*, Hy. Edw.

A beautiful species taken near Albany by Dr. James S. Bailey, and closely resembling C. Meskei, but differing from it by its smaller size, heavier lines on the primaries, and by having the median band of secondaries of nearly equal width throughout, and wanting the hooked termination so prominent in C. Meskei. If the latter should prove to be a variety of C. Unijuga, this may also share the same fate, and will therefore be known as C. Unijuga, *Walk.*, var. Rosalinda, *Hy. Edwards.* Expanse of wing, 2·6 inch.

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* *Qy.*—Are the latter C. Aspasia, *Streck.?*

Type, coll. Dr. James S. Bailey.

Cat. Junctura, Walk.,

is beyond doubt a variety of C. Unijuga, differing only in the presence of more white upon the primaries.

Cat. Cassandra, Hy. Edw.

My type-specimen of this very distinct species was unfortunately broken on its way from San Francisco, and is now in such a condition as to be hardly recognizable. I am, however, very happy to be able to state that a specimen exactly agreeing with it is now in the collection of Mr. F. Tepper, and that the species may be regarded as belonging to our list. Mr. Tepper's specimen was taken at Colorado Springs.

Cat. Irene, Behr.

A very variable species, containing at least four distinct forms, which I characterize as follows. In the type the ground color of the primaries is brown with the lines distinctly marked, and with the t. p. line curved inwardly at the middle so as to join the sub-reniform. Among specimens sent by Mr. Baron will be found the following:

Cat. Irene, Behr.

Var. **Virgilia**, Hy. Edw.

Very much suffused with brown on the primaries, rendering the lines quite indistinct. The t. p. line is almost straight, and does not curve inwardly, as above mentioned.

Mendocino Co., Cal. O. Baron.

Type, coll. Hy. Edwards.

Cat. Irene, Behr.

Var. **Volumnia**, Hy. Edw.

In this the primaries are much dashed with white, and the lines are very distinct, giving a grayish appearance in place of the brown tone of the typical form. The median band of secondaries is very wide, and continued to the anal margin.

Mendocino Co., Cal. O. Baron.

Type, coll. Hy. Edwards.

Cat. Irene, Behr.

Var. **Valeria**, Hy. Edw.

In this the primaries are light fawn color, with only faint brown dashes, with the lines strongly marked. The secondaries are pale red, with the median band very narrow, and not reaching the anal margin. Arizona.

Types, coll. B. Neumoegen, Hy. Edwards.

Cat. Mariana, Hy. Edw.

Var. **Francisca,** Hy. Edw.

A well-marked variety, in which the primaries have a *very decided greenish* tinge, the t. p. line is more regular, lighter in color, and not so deeply toothed as it reaches the internal margin. In other respects it is like the type.

Humboldt Co., Cal. 2 ♂.

Type, coll. Hy. Edwards.

Cat. Concumbens, Walk.

Var. **Diana,** Hy. Edw.

I apply this name to the form of C. Concumbens in which the abdomen is bright rose color, a most perfect example of which has been loaned me by my friend Mr. Allen, of Orono. It has its analogue in the European C. Pacta, L.

Type, coll. A. Allen.

Cat. Cara, Guen.

Var. **Silvia,** Hy. Edw.

I have received from Mr. A. Koebele an example taken by him in Florida, in which the primaries are very largely blotched with yellowish white, the whole of the costal margin, a great portion of the median space, and the apex being thus marked. The thorax is also covered with bluish gray scales. I have given it the above varietal name.

Type, coll. Hy. Edwards.

Cat. Circe, Strecker.

I have no doubt of the distinctness of this form from C. Coccinata, *Grote*, of which it is said by many to be but a variety. The primaries in addition to their much darker shade are always broader than those of C. Coccinata, and, when placed side by side, there is a very great *general* difference in the two forms. As far as our present knowledge of species extends, C. Circe has a good claim to the front rank.

Cat. Ultronia, Hubn.

I believe that all the forms of this variable species may be easily divided, and that the following will include nearly all that are known in collections.

Cat. Ultronia, Hubn.

Var. **Adriana,** Hy. Edw.

An extreme form, in which the primaries are fawn drab, the lines distinct, but wholly wanting the dark clouds toward the apex and along the internal margin. Secondaries with the median band narrow and without the usual basal cloud.

Type, coll. Hy. Edwards.

Cat. Ultronia, Hubn.

Var. **Celia**, Hy. Edw.

A southern form, in which the primaries are dark brown, shaded with whitish, as in the type, but with the median band of secondaries very narrow, sometimes reduced to a mere line, and never reaching the anal margin. On the under side, the crimson shade is deeper than in the typical C. Ultronia, and distributed over the whole surface of the wing. Florida. 4 ♂, 3 ♀.

Types, coll. Hy. Edwards, B. Neumoegen.

Cat. Ultronia, Hubn.

Var. **Mopsa**, Hy. Edw.

In this, the light gray shading on the outer half of primaries is wanting, the brownish ground color being distributed over the whole surface, with only the reniform, a basal streak, and the sub-marginal dentated line whitish.

Florida. Centre, N. Y.

Types, coll. Hy. Edwards, Dr. Jas. S. Bailey.

Cat. Verrilliana, Grote.

Var. **Ophelia**, Hy. Edw.

I wish to correct my description of this form (Bull. Brook. Ent. Soc., vol. ii., p. 95) by adding that in the type the secondaries are yellowish red, while in this they are rosy crimson. C. Verrilliana has been recently taken in large numbers in Colorado by Mr. B. Neumoegen, his examples agreeing with the Texan type, while Mr. Baron has forwarded several specimens of the form C. Ophelia. The latter name will apply to the Californian specimens, in which the secondaries are always crimson and the primaries various shades of gray.

Cat. Violenta, Hy. Edw., *n. sp.*

Larger than C. Verrilliana, which it somewhat resembles, but differing in the following characters: The lines are heavier, and widely edged with brownish shades. The basal line and the dark basal shade, so strongly marked in C. Verrilliana, are absent. The t. a. line is very heavy velvety black, widening much upon the costa, and less oblique than in C. Verrilliana. The t. p. is outwardly broadly edged with brown, in the middle is a light fawn-colored patch, and near the internal margin a black dash connecting it with the t. a. line. Secondaries, bright rosy crimson, marginal band proportionately very broad, and only slightly waved inwardly. The median band is moderate in width, more deeply toothed than in C. Verrilliana, and the fringes are rosy throughout their whole extent. Under side with the red bands very bright in color, whitish only toward the costa.

Exp. wings, 2·25 inch.

Southern Colorado. M. B. Neumoegen, 6 examples, ♂, ♀. Type, coll. B. Neumoegen.

A most beautiful species, somewhat resembling the European C. Conjuncta, *Esp.* I can scarcely consider it a variety of C. Verrilliana, as one or two friends have suggested, its great difference in size, the greater width of the median band, and the rosy fringes serving to distinguish it. All Mr. Neumoegen's examples are true to the characters above given.

Cat. Calphurnia, Hy. Edw., *n. sp.*

Allied to C. Adoptiva, *Grote*, but much smaller, and differing in the following characters: The primaries are wholly of a greenish tinge, and not bright brown, as in C. Adoptiva. The lines are all fainter, and the t. a. line, usually so strongly marked in C. Adoptiva, is here almost obsolete, while the reniform and sub-reniform are very indistinct. The secondaries are wholly black, with the exception of a small central cloud, a broad marginal band, and a narrow central band, which are orange. Fringes and apical patch also orange, the fringes being cut towards the anal half, by distinct black lines.

Under side: the primaries are dusky, with a moderate central band of dull orange, and a basal patch of the same color interrupted with dusky. The markings of the secondaries are the same as those of the upper side, only less pronounced in color.

Exp. wings, 2·10 inch. Kansas.

Type, coll. Dr. James S. Bailey.

Cat. Cœlebs, Grote.

I am convinced that this species is not, as has been erroneously suggested, a variety of C. Badia. The type is now in my hands, and an examination of it and of some specimens sent by Mr. A. Allen proves it to be widely distinct. I am, however, certain that dark-colored specimens of C. Badia have been distributed for C. Cœlebs, and thus may have arisen the error. C. Cœlebs appears to be one of our rarest species.

Cat. Cordelia, Hy. Edw., *n. sp.*

Allied to and of the size of C. Amasia, *Ab.* and *Sm.* Primaries with the ground color sordid white. Basal half-line very distinct. T. a. line distinct for only the costal half of its length, and enclosing a dark patch composed of greenish-brown and blackish scales. Space between the t. a. and t. p. lines sordid white, with the reniform blackish, resting on a blackish-green costal patch. Sub-reniform almost obsolete. Throughout the space is a faint greenish cloud. Between the t. p. and the sub-marginal lines is a narrow band of cinnamon brown, passing into a blackish patch both on the costa and internal margin. Sub-marginal line nearly straight, with the dentations almost equal. Posterior margin with an olivaceous cloud. Thorax, as in Amasia, mottled with black and white. Secondaries rather of a duller yellow than in Amasia, the median band hooked, and joining a dark shade, extending to the base along the anal margin. Under side as in Amasia.

From five specimens taken as follows: Georgia, ♀ (coll. Akhurst); New York, ♂ (coll. Akhurst); Texas, ♂ (coll. Dr. Bailey); Texas, ♂ (coll. Neumoegen); Florida, ♂ (coll. Hy. Edwards). All these agree exactly with one another, and cannot be confounded with any other form.

Types, coll. Dr. James S. Bailey, Hy. Edwards.

Cat. Formula, G. & R.

Var. **Isabella**, Hy. Edw.

A very pale form of C. Formula, in which the primaries are wholly whitish gray, the lines bright black and very distinct, the t. p. being broadly edged with cinnamon brown.

Texas.

Type, coll. Dr. James S. Bailey.

This form is much paler than the variety Aholah, *Strecker*.

Cat. Fratercula, G. & R.

Var. **Jacquenetta**, Hy. Edw.

A singular form, in which the primaries are of an olivaceous tint throughout, the lines almost obliterated, and the reniform very indistinct. A darker olivaceous shade runs from the base to about the middle of the wing, the space behind the t. p. line being yellowish brown, with a blackish cloud toward the apex.

Albany, N. Y.

Types, coll. J. A. Lintner, Hy. Edwards.

Cat. Timandra, Hy. Edw., *n. sp.*

Allied to C. Minuta, *W. H. Edw.* Primaries sordid white, with the base olivaceous. The t. a. line is regularly toothed, the dentations rounded and nearly equal. Sub-reniform white, distinct. Reniform greenish white, clouded with black. T. p. line with one large tooth nearest the apex, thence to internal margin, with very slight dentations. Secondaries pale orange, marginal band broad at apex, abruptly narrowing towards the anal angle, and joined to the anal patch by a fine black line. The median band is straight, very narrow, and does not approach the anal margin. At the base is a slight brownish cloud. Under side with the markings pale orange, much flecked with white scales, the dark bands of both wings narrow, and dusky rather than black.

Exp. of wings, 1·75 inch. Very close to the European C. Diversa, *Hubn.*

1 ♀. Prof. Boll, N. W. Texas.

Type, coll. B. Neumoegen.

Cat. Amica, Hubn.

Var. **Nerissa,** Hy. Edw.

A very dark form from Texas, in which the usual lines of the primaries are lost in the almost black ground color, which is brightly but sparingly mottled with white.

Type, coll. B. Neumoegen.

List of New Species and Varieties Described in this Paper.

Cat.	Paulina	*n. var.*	Ohio.
“	Phrynia	“	N. Y., Pa., &c.
“	Bianca	“	N. Y., Me., &c.
“	Rosalinda	*n. sp.*	N. Y.
“	Virgilia	*n. var.*	Cal.
“	Volumnia	“	Cal.
“	Valeria	“	Ariz.
“	Francisca	“	Cal.
“	Diana	“	Me.
“	Silvia	“	Fla.
“	Adriana	“	N. Y., &c.
“	Mopsa	“	Fla., N. Y., &c.
“	Celia	“	Fla.
“	Violenta	*n. sp.*	S. Col.
“	Calphurnia	“	Ks.
“	Cordelia	“	N. Y., Ga., Tex., Fla.
“	Isabella	*n. var.*	Tex.
“	Jacquenetta	“	N. Y.
“	Timandra	*n. sp.*	N. W. Tex.
“	Nerissa	*n. var.*	Tex.

I have received much kindness from my entomological friends during the preparation of this paper, and return my warmest thanks to Messrs. Allen, Akhurst, Bailey, Grote, Graef, Lintner, Neumoegen, and Tepper, for the opportunity to examine their collections, and for the loan and donation of specimens.

Hy. Edwards.

New York, October 23, 1880.

Note.—Among the examples loaned to me by Dr. Bailey was a very curious one of C. Residua, *Grote*, probably an aborted form. The primaries are extremely short, and very much rounded at the apices, while the pale posterior margin is remarkably broad. The secondaries are also very much rounded, and the insect has a very short and stout appearance, looking at first sight unlike a Catocala. It expands but 2 inches.

Description of a New Species of Pleusioneura from Central America.

By James S. Bailey, A. M., M. D.

Pleusioneura FritzGaertneri, *n. sp.* Allied to Eligius; the primaries are less indented on the outer margin below vein 2; the expanse is greater; the transparent spot below vein 1 at the base of the vein in Eligius is surmounted in the fork of the vein by a second in FritzGaertneri; the mesial band of translucent spots is narrower and the smaller inferior spots less rounded and longer. The color is smoky brown with an olivaceous tinge; the primaries with double clouded transparent dots at base of vein 1; a mesial band of translucent spots with arcuate edges, of which three larger, one on costa, one on cell, and one filling interspace between veins at base and vein 1, and three smaller, one between veins 2 and 3, and two on sub-median interspace. The sub-terminal band indicated by three approximate sub-costal spots and two beyond these elongate on the interspaces opposite the cell. Hind wings mottled, without spots, reflecting the paler macular bands of the under surface, which are more diffuse than in Eligius. Fringes beneath distinct, checkered with whitish. The greatest expanse of twelve specimens in my collection is 1 1-4 inch; the least, 1 1-8 inch.

This unique species is named from its discoverer Doctor M. G. R. FritzGaertneri, State Geologist of the Republic of Honduras, C. A.

The story of the capture of this Pleusioneura is interesting, and is here given in the Doctor's own language:

"On my journey to the Salvadorian coast, having my net and cyanide bottle with me, I was disappointed as I descended into the hot region, not to discover a single butterfly.

"The heat was intense, and vegetation seemed consumed, only occasionally anything green was seen, but now and then large trees were in full bloom, but entirely without foliage. It was so nearly all the way down.

"The journey was made mostly in the night, sleeping during the day in the coolest places which could be found.

"You may imagine my pleasure and surprise in exploring an old deserted mine, in March, 1879, at a depth of eighty feet, to find swarms of this butterfly in the impenetrable darkness of the underground passage.

"In the mine there were also numbers of bats and rattlesnakes, also a species of serpent known in this country as Tamakas.

"The butterflies were undoubtedly attracted to this depth by the moisture and coolness of the atmosphere, although I did not find this species on the surface.

"The mine was situated near the Volcano de San Miguel, in the vicinity of Lama Larga in the Republic of Salvadore, C. A., the elevation of which is six hundred feet above the sea level. The month of March constitutes the better part of the dry season, which in Salvadore is so extremely hot that vegetation seems to die out. It is a tropical winter in which the cold is replaced by heat."

INTERESTING CAPTURES.

On September 5th I took 4 ♀ and 1 ♂ of *Thecla M. Album*, feeding on the flowers of golden-rod and other plants. They were perfectly fresh, and evidently just hatched. On the evening of the 3d of October, a magnificent and perfectly fresh specimen of *Sphinx Ello*, ♂, flew into my room.

Junonia Cœnia has been quite common here in one locality. Only one specimen was ever taken here before the present season.

Dayton, O. G. R. PILATE.

Notice.—While collecting the publications on N. A. Coleoptera, I have often been embarrassed to make correct choices from the different lists of books for sale. I shall therefore bring to the aid of my fellow students lists of the papers printed in different journals on Coleoptera, as on the following page: F. G. SCHAUPP.

Bibliotheca Coleopterologica.—1.

Annals of the Lyceum of Natural History of New York.

Vol. I. **J. E. Leconte.** Descriptions of Some New Species of N. A. Insects (describes 20 new Coleoptera). 1824, pp. 169–173. With 1 plate.

Vol. IV. **John L. Leconte.** Monograph of the Species of Pasimachus inhabiting the U. S., with descr. of two new genera belonging to the family Carabicina (*Psydrus* and *Nothopus*). 1848, pp. 141–154. With 2 plates.

John L. Leconte. On Certain Coleoptera, indigenous to the Eastern and Western Continents (8 species). 1848, pp. 159–163.

John L. Leconte. A Descriptive Catalogue of the Geodephagous Coleoptera inhabiting the U. S. East of the Rocky Mts. (Bibliography, localities, descriptions; 2 plates, with 14 Cicindelæ). 1848, pp. 172–474. From p. 234 the pages are numbered 100 too high).

Vol. V. **John L. Leconte.** Synopsis of the Coleopt. Insects of the group Cleridæ, etc. 1849, pp. 9–35.

John L. Leconte. Descriptions of New Species of Coleoptera from California. (Describes also species from Oregon and Southern and Western States.) 1851–1852, pp. 125–216.

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Proceedings of the Entomological Society of Philadelphia.

Vol. I. **E. T. Cresson.** Catalogue of the Cicindelidæ of North America. Lists, localities, and bibliography, with some notes of North American species. 1861, pp. 7–20.

Geo. H. Horn. Notes on the Habits of some Coleopterous Larvæ and Pupæ. (Notes on 15 larvæ.) 1861, pp. 28–30.

Geo. H. Horn. Observations on the Habits of some Coleopterous Larvæ and Pupæ (5 species). 1861, pp. 43, 44.

J. H. Bland. Catalogue of the Longicorn Coleoptera taken in the Vicinity of Philadelphia. 1861, pp. 93–101.

Baron R. Osten Sacken. Description of some Larvæ of North American Coleoptera. (Describes 12 larvæ.) 1862, pp. 105–130. With 1 plate.

Geo. H. Horn, M. D. Description of some New North American Coleoptera (4 species). 1862, pp. 187, 188.

James H. B. Bland. Descriptions of Several Supposed New Species of Cerambycidæ in the Collection of the Ent. Soc. of Philadelphia, with Observations on some already Described (10 species). 1862, pp. 267–276.

J. H. Bland. Descriptions of a Few Supposed New Species of North American Coleoptera (6 species). 1863, pp. 353–356.

Vol. II. **James H. B. Bland.** Descriptions of a Few Supposed New Species of North American Coleoptera (4 species). 1863, pp. 319–323.

Vol. III. **James H. B. Bland.** Descriptions of Several New Species of North American Coleoptera (11 species). 1864, pp. 65–72.

James H. B. Bland. Descriptions of New North American Coleoptera (7 species). 1864, pp. 253–256.

TO BE CONTINUED.

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A New Deltoid.

By A. R. Grote.

Megachyta gypsalis, *n. s.*

♂. Male antennæ ciliate, bristled, and with a median scaled notch on flexure. Size of *lituralis* and Zeller's *deceptricalis*, with dentate outer median line like the latter, while differing from both in color and detail of markings, while much nearer to *deceptricalis*. Chalky white, the base of primaries shaded with ochery, the terminal and s. t. spaces sprinkled with brownish black. Inner line with but a moderate costal thickening, forming three lobes. Outer line with the costal portion only moderately thickened but much curved and outwardly projected, denticulate to internal margin. A straight denticulate s. t. line, the dark terminal space cut by the pale veins. The s. t. line white, bordered outwardly by black. Hind wings whitish with double fuscous lines; the black terminal line sub-continuous. Beneath with dots and well-marked fuscous median lines. The greater projection of the line, as compared with *deceptricalis*, shows also beneath.

Expanse, 22 mil. North Carolina, Mr. Morrison.

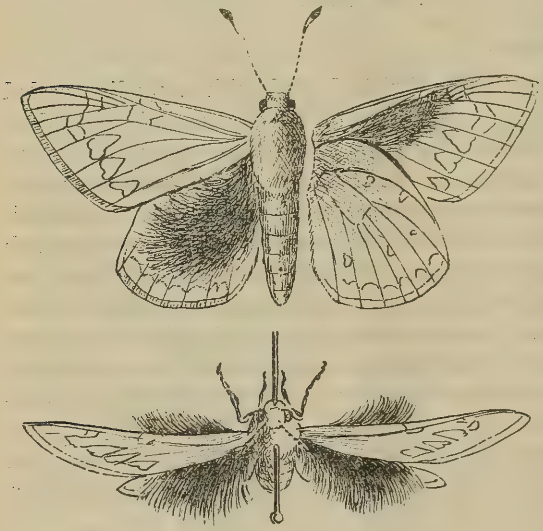
The costal spots are much reduced in this, the third described species of the genus.

On Ægiale Confagui, *Streck.* ♂.

By H. Strecker.

At the time I described the ♀ of the above in *Proc. Acad. Nat. Sci. Phil.* for 1876, p. 148, the ♂ was not known. Within the last year, however, examples of that sex, as well as more females, have been received from the Llana Estacada and Southwest Texas. The discovery of the ♂ most certainly sets at rest all doubts as to the distinctness of the species from *Æ. Yuccæ*, which was doubted by Prof. Riley, and apparently not without some show of probability, but leaves us in amazement at the never-ending wonders displayed in Nature's creations.

The ♂ is 2 5-8 inches in expanse, and shaped much as is *Yuccæ*, and is dark brown on upper surface. Primaries have on outer half an irregular row of five pale-yellow spots, of various sizes and shapes, which extend from inner margin not far from inner angle to the costa; also, a sixth spot in middle of wing near the costa. Secondaries with a rather narrow, even, straw-colored border. Fringes of all wings dirty white. Under surface as above, with the addition of some grayish shading on costa of secondaries. But what makes this one of the most remarkable of North American Diurnals is that the whole upper side of the secondaries, excepting the space occupied by the narrow yellow border of outer margin, is thickly covered with long, fine, black hair, which stands erect at almost right angles to the wing, to nearly a quarter of an inch in height. The basal third of under surface of primaries is also furnished with a like curious appendage. The accompanying figures will serve to convey some idea of this anomalous insect.



(Argynnis.)

42. A. Chariclea, *Schneid.* *Male:* Upper side fulvous, black markings rather heavy ; under side of primaries pale yellow-fulvous mottled with ferruginous at apex and on margin, of secondaries dark purplish-ferruginous, slightly mottled with yellow ; a central row of yellow spots ; at base and margin spots white slightly silvered.

Female: Same as male, markings heavier. Expanse, 1 3-8 to 1 1-2 inch. Colorado, British America, Columbia, Labrador, Greenland.

43. A. Freya, *Thunb.* Pale fulvous, markings heavy ; under side of primaries pale fulvous, yellow at apex, mottled with ferruginous, of secondaries ferruginous mottled with yellow, spots large, white, slightly silvered. Expanse, 1 1-2 inch. Colorado, Rocky Mountains, British America.

44. A. Montinus, *Scudder.* Much like *Chariclea,* but the ground color is deeper ; under side of secondaries deep ferruginous, slightly mottled with white, and with a marginal row of spots of the same color. Expanse, 1 1-2 to 1 5-8 inch. New Hampshire, White Mountains.

45. A. Polaris, *B'dvl.* Upper side dull fulvous, markings heavy, fringes white ; under side of primaries fulvous, a marginal row of white lines on both wings ; under side of secondaries ferruginous, darkest at base, mottled with white. Expanse, 1 1-2 to 1 5-8 inch. Arctic America, Greenland, Labrador.

46. A. Frigga, *Thunb.* Upper side pale fulvous, markings very heavy ; under side of primaries pale fulvous, mottled with yellow and ferruginous, of secondaries ferruginous with a central band of yellow spots edged outwardly with ferruginous, from here to margin purplish. Expanse, 1 5-8 to 1 3-4 inch. British America, Labrador, Colorado, Rocky Mountains.

47. A. Bellona, *Fabr.* Pale fulvous, black markings light ; under side of primaries pale fulvous, mottled with purple at apex and margin, of secondaries ferruginous mottled with purple. Expanse, 1 1-2 to 1 5-8 inch. Northern U. S., Rocky Mountains, California, British America, Canada.

48. A. Epithore, *B'dvl.* Upper side same as the above, black markings slighter below, secondaries mottled with yellow, less purple. Expanse, 1 1-2 to 1 5-8 inch. California, Oregon, Colorado.

49. A. Improba, *Butler.* Primaries dull tawny, deep chocolate brown at base; secondaries deep chocolate brown; markings as in *A. Frigga*, but indistinct on secondaries; secondaries below with the basal two-thirds ferruginous, irrorated with gray scales at its external margin, the latter forming a well-marked angle upon the radial nervure, above which it is trisinuate and bordered from the costa downward by a tapering diffused white spot; external third fleshy brown, densely speckled with white, the outer border grayish, bounded internally by an interrupted dusky line; costal margin pure white; a sharply angulated transverse band (as in *Freya*) across the basal area, indicated by two irregular parallel dark-brown lines, its sub-costal area filled in with white and its central area irrorated with same. Expands 1·75 inch. Taken between latitude 67½° and 68° Arctic America.

50. A. Kriemhild, *Strecker.* Female, size and shape of *Epithore*, Bdvl; on upper surface not quite as dark as in that species, the black markings not as heavy, and there is no dark suffusion at the basal parts; the under surface is much paler than in *Bellona*, *Epithore*, or any of the allied species, though of the same style of ornamentation; the broad irregular mesial band and basal spots of costa are edged with a sharp dark-brown line. Arizona, Utah, and Colorado.

Euptoieta, Doub,

Approaches closely to "Argynnis," but can be easily distinguished by the absence of all silvered or other spots common to all *Argynnids* on under side of secondaries, and of the triangular black spots on the margins.

1. E. Claudia, *Cram.* *Male:* Upper side dull pale ferruginous, lighter in median region, which is edged inwardly with a zigzag black line; an irregular row of discal black spots; under side of primaries bright ferruginous from base to median; cellular spot light banded with black; outer edge pale buff mottled with gray and ferruginous, lightest in apical region; black markings of upper side appear through; under side of secondaries dull ferruginous mottled with gray; a broad central band of pale buff, the black spots of upper side appear through faintly.

Female: Same as male, but markings heavier. Expands 1 3-4 to 2 3-4 inches. Middle, Southern, and Western States.

2. E. Hegesia, *Cram.* Upper side uniform bright ferruginous, the black markings on primaries same as in "Claudia," as also on secondaries with the exception of the absence of median zigzag lines; under side much the same as "Claudia," but less mottled, and more uniformly dark ferruginous. Expands about 2 inches. Southern California occasionally.

Melitæa, Fabr.

Generic characters similar to "Argynnis"; wings usually black or fulvous, and spotted; no nacred spots on under side of secondaries; discoidal cellule on secondaries always open.

1. M. Phæton, *Drury.* *Male:* Upper side black, with a row of marginal red spots followed by three rows of pale-yellow spots on primaries and two on secondaries; two red spots in cell of primaries; all the described spots appear through on under side but much heavier, and in addition there are two more rows of yellow spots on secondaries and irregular patches of red on basal region.

Female: Much the same as male. Expanse of male, 1 1-2 to 2 inches; of female, 2 to 2 5-8 inches. U. S., east of the Rocky Mountains; Canada.

2. M. Chalcedon, *B'dvl.* *Male:* Upper side black spotted with pale ochrey-yellow and red; both hind margins edged by a series of small red spots, followed by two rows of yellow, next by a bifid yellow row on primaries, more or less replaced by red, in cell four red and yellow spots alternating and one yellow below cell; secondaries have a mesial band of large yellow spots and four spots on basal area. Under side of primaries bright brick-red, with the two outer rows of yellow spots repeated; secondaries have a red marginal border, then a series of large yellow lunules on black ground, next a series of large red spots, lunular or rounded, usually edged with yellow, then a mesial row of large yellow spots cut unequally by a black line; basal area red and enclosing a band of four yellow spots, and a fifth in cell back of line.

Female: Similar to male. Expanse of male, 1 3-4 to 2 inches; of female, 2 1-2 inches. California.

3. M. Cooperi, *Behr.* Upper side as in *Chalcedon;* under side dull or brownish red, banded as in *Chalcedon*, the spots of the bands being dull buff. (NOTE.—Dr. Behr, *Proc. Cal. Acad.*, vol. iii., p. 90, says: "This species is very similar to *Chalcedon*, but the want of the yellowish halo around the lunulæ of the brown band of the under side of secondaries is a very positive diagnostic character. The brown color of the bands of hind wings is always of the same sombre hue as that of the under side of fore wings, and never of the fiery brick-red that colors the fasciæ on the under side of *Chalcedon*.") With all these well-marked differences, the two species look so much alike that it would have been a long time before *Cooperi* would have been recognized as a distinct species if it had not been for the striking differences of its caterpillar. It is nearly of the shape and coloration of the European *M. Aurinia*, Rott., brimstone-yellow, with a dorsal and a lateral black stripe, while the larva of *Chalcedon* is velvety black irrorated with white. Expanse of *Cooperi* same as *Chalcedon*.

4. **M. Anicia,** *Doubleday.* *Male:* Upper side red, marked with pale ochrey-yellow and black; in many examples the black being reduced to a very small quantity. The fore wings have a marginal series of red spots, then a row of red with more or less yellow in centres, then one of yellow with red edges or yellow on red ground; the fourth row (usually in this group of distinct spots) is here diffused with a broad discal band, on which the fork appears in yellow or yellow and red; four spots in cell red and yellow alternately; the area below cell red with a yellow spot; hind wings have red marginal series, the second row either red with more or less yellow in centre or yellow with red edges; the third red, small, with yellow centres; and the second and third rows stand on black ground; fourth row large spots, the outer ends red, an obsolescent demi-row of red on anterior half of wing; four yellow spots on the black basal area. Under side of primaries nearly all red, a few yellow sub-apical spots on second row and an extra discal faint one; hind wings have a marginal red row, a series of large yellow crescents on black ground; the third row yellow spots with round red spots in centre; the fourth, of long yellow spots, making a broad band, which is unequally cut from margin to margin by a black line; next, a red band ending at submedian nervule; then a yellow band across the wing with a yellow spot outside the row at end of cell; a red band at base.

Female: Very like male, the red largely predominating on upper side, and often the red bands are diffused so as to occupy most of the surface. Expanse of male, about 2 inches; of female, 2 to 2 3-10 inches. Nevada, Yosemite.

Descriptions of some New Forms of Ægeridæ.

By Henry Edwards.

In working over a portion of the large mass of material which has been kindly loaned me for my proposed monograph of the N. American Ægeridæ, I find the following remarkable forms, and offer the descriptions of them more for the purpose of calling the attention of entomologists to my interest in the group than for any other reason. It is only by the examination of examples from various regions that we can arrive at any positive knowledge of these interesting insects, and I trust I may have the assistance of collectors in the different portions of our territory, as by such combined aid can I alone hope to make my intended monograph as valuable and complete as I desire it to be.

Melittia Gloriosa, *n. sp.*

Upper side: Primaries yellowish fawn color, with the costal and posterior margins rather darker, and the outer edges of the fringe dusky white. Secondaries dull orange, with a narrow marginal line, and the fringe dusky brown. Head and thorax concolorous with the primaries, the latter with a pale-orange blotch on each side in front, and some flattened bluish scales at the base. Abdomen with the base covered with long orange hairs, which extend along the sides to the fifth segment. The third and fifth segments are ochreous, the remainder the same color as the primaries, each being edged posteriorly with a row of bluish scales. Antennæ blackish brown above, reddish beneath.

Under side: Both wings dusky orange, paler along costa of primaries, with the fringes broadly smoky brown. Head, palpi, thorax, and abdomen sordid white, as are also the anterior tibiæ. The posterior pair are densely clothed (as in *M. cucurbitæ*) at their basal half with long orange hairs, with blackish at their posterior extremity, where they are mingled with a few bluish scales.

Expanse of wings, 2 inches. Type, coll. Hy. Edwards.

This is the largest and handsomest species of the genus with which I am acquainted. I first took this remarkable insect in San Leandro, Cal., in 1872. It was at rest upon a tree in a field of melons (*Cucumis melo*), and it was subsequently found by Mr. S. Brannan in Sta. Rosa Island, Cal., on the stems of prickly pear (*Opuntia littoralis*, Engelm.). I have recently seen some examples from Texas in the collection of Mr. B. Neumoegen, which I believe to be the same species, though I have not yet carefully examined them.

Sciapteron Robiniæ, *n. sp.*

Upper side: Primaries opaque as in all of the genus, rich golden brown. They are slightly darker along the costa, and have a faint purple reflection toward the apex. Secondaries diaphanous, brightly opalescent, with a faint golden-brown longitudinal streak at posterior extremity of the cell. Costal edge pale yellow. Fringe golden brown, pale yellow at the base. Head golden yellow, as are the palpi, except at the base, where they are brownish. Thorax brown on disc, golden yellow in front and behind. Abdomen with the three basal segments blackish brown, the second and third edged with yellow. The posterior segments are all bright golden yellow, with the anal tuft a little darker.

Under side: Primaries golden orange, with a faint lemon-yellow discal spot. Secondaries same as the upper. Tarsi and tibiæ are golden yellow, blackish at their base. Antennæ red brown above, golden yellow beneath.

Expanse of wings, 1·35 inch. 2 ♂, 3 ♀. Contra Costa County, Cal.; Virginia City, Nev. On *Robinia pseudacacia* and *Populus alba.* to which trees it is particularly destructive.

Types, coll. Hy. Edwards.

Ægeria (?) aureopurpura, *n. sp.*

Primaries opaque, rich purplish black, with a bright golden lustre. Near the apex are five longitudinal streaks of golden yellow, reducing in length as they near the costa. Secondaries transparent, with the veins very fine. Fringes of both wings brown. Antennæ black, with a broad white band near the extremity. Palpi, collar, tegulæ, and spot at base of thorax pale golden yellow. Abdomen blue-black, with the edges of first, second, fourth, and anal segments pale golden yellow. Anal tuft, brown. On the under side the forewings are largely streaked with golden yellow. The fore tibiæ and tarsi are golden yellow, the hinder pairs indistinctly banded with purplish brown.

Expanse, 0·60 inch. Texas, J. Boll.

Type, coll. Mus. Comp. Zool., Cambridge.

Probably belonging to Mr. Grote's sub-genus *Pyrrhotænia.*

◆

For Sale.—Dr. Horn's "Synopsis of the Silphidæ of the United States with Reference to the Genera of Other Countries." *Trans. Am. Ent. Soc.*, 1880. 104 pp., 3 plates. Price, $1.25.

F. G. Schaupp.

BULLETIN

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Description of some New Species of North American Lepidoptera.

By Geo. D. Hulst.

1. Sesia nigella, *sp. nov.*

Expands 7 1-2 lines. *Head:* Crown black; palpi prominent, orange yellow; antennæ black, ciliated, slightly swollen beyond the middle, slightly curved, pointed; collar, orange yellow. *Thorax* and abdomen black; abdomen tufted. The thorax has a yellow line on each side above base of wings. The *abdomen* has a yellow band on fourth segment from thorax, which is narrow above, broader on sides. There is a second yellow band on last segment just before the anal tuft. Both these bands reach only to the stigmatal space. Tuft black, becoming yellowish at extremity.

Anterior *wings* uniform black; hind wings transparent, with nerves partly and faintly black. All fringes black. Underneath as above, except that the fore-wings are yellowish on the basal half. *Legs:* Anterior and middle pair dark brown, with feet and tarsi yellow. Hind pair the same, with tibiæ as well yellow.

Two specimens, ♂ and ♀, taken in coitu on a leaf of the swamp button-bush near Fairport, Western New York. The ♀, which was soon after by accident lost, was larger than the male, and, if the recollection of appearance is correct, marked the same. A ♀ since seen is in coloring like ♂.

2. Sesia flavipes, *sp. nov.*

Expanse, ♂ 1 inch; ♀ 17 lines. *Head:* Crown black, eyes edged in front with yellow, palpi pilose, erect, yellow. Antennæ pectinate in ♂, ciliate, hardly longer than the thorax, and almost linear in ♀; collar, yellow. *Thorax* black, with yellow sub-dorsal line on anterior portion, a yellow lateral spot just behind the collar. and a larger one just before base of wings. Yellow also behind and beneath base of wings. *Abdomen* black, with broad yellow band on rear of each segment, more diffuse and quite covering the last. Anal parts in ♀ edged underneath with orange. Anal tuft almost wanting.

Fore-wings transparent in center. Costa blackish. Costal band, exterior margin, which is quite broad, and bar crossing transparent space, reddish brown; posterior edge black; wing yellowish toward base; veins lightly lined in the transparent portion with black. *Hind wings:* Veins yellowish towards base, becoming black towards exterior margin. All fringes black, with reddish tinge at tips of fore-wings. Underneath, more yellowish towards base, and brownish at tips. Marginal band on fore-wings wider. *Legs:* Coxæ black, femora black, yellow below; all the rest yellow.

Two specimens, ♂ and ♀, taken on different days, each at rest on blackberry leaves, late in September, in Brooklyn, N. Y.

3. Sesia rubescens, *sp. nov.*

Expands 1 inch. *Head:* Crown black, face and mouth-parts yellow, palpi long, protruding, pilose, orange yellow; collar yellow; antennæ yellow, ciliated, nearly linear, pointed at end. *Thorax* black, yellow mark at tegulæ, yellow about the base of wings, yellow band along posterior edge. *Abdomen* black, posterior two-thirds of each segment covered with yellow, except the second from the thorax, which has only a yellow dorsal spot. Anal tuft quite prominent, yellow. Body almost entirely yellow below.

Fore-wings transparent in central space, crossed by a black band. The inner transparent space on its outer margin, and the outer transparent space all around, lined with brick red. Veins on outer spot lined with black. Costæ, exterior and interior margins, and fringes black. The interior margin has an interior line extending two-thirds of length of wing from base, brick-red. *Hind-wings* transparent, black at base. Discal spot prominent, black, lined with reddish; veins reddish, especially along the interior margin, where, with a decidedly pinkish shade, it becomes almost confluent over the transparent surface. Exterior margin slightly marked with pink; fringe wide, black. *Underneath:* Cross-band of transparent space and posterior margin orange red. Hind-wings without black in discal spot, and the red, with an orange shade more prominent. *Legs:* Coxæ and femora black; the rest yellow.

One specimen from Colorado.

4. Ctenucha pyrrhoura, *sp. nov.*

Expands 1 1-4 inches. *Head* black; antennæ strongly pectinated. *Collar* bright red.

Fore-wings dark smoky brown with slight metallic reflection; fringe light. *Hind-wings* blue black, with constant metallic reflection, especially on inner half. All wings very closely in shape like *C. Virginica. Thorax* and *abdomen* shining metallic blue black; extremity of abdomen bright red. Underneath as above. *Fore-legs* with coxæ bright red posteriorly. The rest black.

Colorado. Somewhat of a connecting link between *Ctenucha* and *Scepsis*. Easily distinguished from others of its genus by its small size and bright-red collar and tail.

5. Leucania nigrofascia, *sp. nov.*

Expands 17 lines. *Head*, *thorax*, and *abdomen* dirty white. Antennæ ciliated, light brown.

Fore-wing generally a dirty white, made up of a white base thickly peppered with light brown. The costa and middle of posterior edge are somewhat darker than the rest of the wing. A broad, jet-black dash begins just beyond the middle of fore-wing and extends to the outer margin. It is of uniform width, squarely cut off at the inner end, and with edges sharply defined. *Hind-wings* white. *Underneath:* Wings clearer white, with black dash of fore-wings somewhat indistinct.

One specimen, taken by Mr. Albert Kœbele at Tallahassee, Fla.

6. Melitæa Phæthusa, *aber. nov.*

In June, 1880, I took with the net just outside the city line of Brooklyn, at East Williamsburgh, a remarkable aberration of *M. Phæton*, to which I give the above name. The specimen is a ♂. It has the black ground-color of *M. Phæton*, but the orange spots are wholly wanting on the upper surface of the wings; and beneath there are found only the one near the base, and, almost obsolete, the one along the costa near the base. Antennæ, head, and body are the same as in the normal form. This aberration was taken at the same spot where a year before I took *M. superba*, Streck. It is a melanotic aberration, not, I believe, before noticed in this genus, where suffusion is quite common.

A New Species of North American Ægeriadæ.

By A. R. Grote.

Trochilium (Sciapteron) simulans, *n. s.*

Size large, body stout and long. Yellow and black and very wasp-like. Clypeus black; a broad yellow stripe on each side from the base of the antennæ downward, margining the eyes in front. Ocelli. Collar yellow behind, black in front. A yellow spot on each side of the thorax in front immediately below the collar. A yellow spot in front of the insertion of primaries; another on the sides of the thorax beneath the wings. Thorax black, tegulæ with yellow terminal edging. A transverse yellow line behind. Palpi applied to the front; terminal joints yellow; basal joint black, with longer yellow and black dependent hairs beneath. Legs yellow shaded with rusty; femora blackish within; coxæ yellow. Abdomen yellow with a sub-obsolete row of black spots along the dorsum; basal segment black; segments very narrowly edged anteriorly with black above; beneath about half yellow and black; anal tuft rusty at tip, else yellow over black. Wings without discal spots. Fore-wings brown with a pellucid patch at internal angle and sub-diaphanous at base. Hind-wings clear with a yellowish stain, fringes and nervures rather pale brown. Antennæ rather short, blue-black.

Expanse, 36 mil. Length of body, 23 mil. Illinois, Algonquin. Collected by Dr. Nason, June 27th.

A little stouter than *denudatum*, wanting the discal, sub-costal marks, with the primaries less densely scaled, and with the body yellow and black without brownish shadings.

I have had this species sometimes, and suspected it to be Dr. Harris's *marginatum*, but from his description that must be different. Harris does not mention the yellow collar nor the yellow transverse line on the thorax behind; the abdomen is described as having the hind margins of the segments yellow, whereas the segments above are almost entirely yellow in *simulans*, with very narrow black anterior edging, the basal segment wholly black, and there is a series of indistinct black spots on the dorsum; the palpi are black beneath at base. The wings have no "broad black fringe" to the secondaries. The wings are shorter and paler than *denudatum*, without any discal marks; the fringe to the secondaries rather short and pale (my type is in perfect condition). The disposition of the hyaline and brown portions of the primaries is quite like *denudatum*, and Dr. Harris's description of the wings of *marginatum* differs throughout from *simu-*

lans, as there are no "transverse bands" whatever. *T. simulans* seems to be allied to the European *apiformis*.

N. B.—Mr. Hy. Edwards, who is studying this group, refers this species to the sub-genus *Sciapteron* of Staudinger, and identifies Harris's *marginatum*, of which he has seen the type, as a form very different in its characters, and sub-generically distinct from *simulans*.

A List of Chrysomelidæ observed upon Salix discolor, *Muhl*, and S. petiolaris, var. gracilis, *Andrus*.†

By F. M. Webster, Waterman, Ills.

Zeugophora consanguinea, Cr., *Cryptocephalus* sulphuripennis, Mels, lituratus, Fab., venustus, Fab., mutabilis, Mels., auratus, Fab., striatulus, Lec., *Pachybrachys* atomarius, Mels., infaustus, Hald., *Xanthonia* 10-notata, Say., villosula, Mels., *Paria* 6-notata, Say., 4-notata, Say., *Colaspis* favosa, Say., strigosa, Dej., prœtextata, Say., convexa, Say., puncticollis, Say., *Chrysomela* auripennis, Say., *Plagiodera* scripta, Fab. (with var.), *Cerotoma* caminea, Fab., *Phyllobrotica* decorata, Say., discoidea, Fab., *Diabrotica* fossator, Lec. (rarely),* *Galerucella* decora, Say., *Œdionychis* thyamoides, Cr.,** *Disonycha* triangularis, Say., collaris, Say., pallipes Cr.,*** *Craptodera* carinata, Gem., ignita, Ill., *Longitarsus* testaceus, Lec., *Dibolia* ærea, Mels., *Crepidodera* Helxinis, Fin., *Epitrix* cucumeris, Harr., *Chætocnema* confinis, Cr. (have taken this also under bark of decaying trees).

† For the identification of these I am indebted to Mr. M. S. Bebb.

* I believe this to feed almost exclusively upon the pollen of the *Compositæ*.

** I have taken this in crevices of bark on trees during winter.

*** Found also under boards and rubbish.

Although the occurrence of these species upon the willows named cannot be considered conclusive evidence of their having eaten of the foliage, yet the fact is strongly suggestive. The species were collected, for the most part, during the early twilight, a time when many species feed. Formerly the prairie fires, but later the mower of the farmer, destroys each season's growth, consequently each succeeding spring a fresh shoot takes its place, offering a tender morsel for the leaf-eater.

Another and equally interesting fact is the collecting of many Carabidæ, Cerambycidæ, Elateridæ, Telephoridæ, and Curculionidæ, in the same localities, a list of which will be given in a future paper.

As the willows grow often interjacent, and the collecting was done with a common beating-net, I am unable to distinguish the favorite of each insect.

A great number of the above-named species were frequently captured on Acer rubrum, Lin., in a locality where willows are very scarce. F. G. SCHAUPP.

Melitæa, Fabr.

8. M. Colon, *W. H. Edwards, nov. sp.* Size and general appearance of *Chalcedon*; under side intense red, banded as *Chalcedon*, but the second red band from margin on secondaries is not made up of "red spots, lunulæ or rounded," but is a continuous band without yellow, and the sub-marginal yellow spots of both wings are in the male more deeply excavated, in the female higher, lanceolate, deeply excavated. Expanse of male, 2 inches; of female, 2·3 inches. Mount Hood, Oregon. Collected by Mr. H. K. Morrison in 1880.

9. M. Perdiceas, *W. H. Edw., n. sp. Male:* Upper side dull black-brown, spotted with buff and dull red, the spots disposed as in *Chalcedon*; under side of primaries dull red, hind margin dull orange; secondaries have orange margin, sub-marginal yellow lunules not much excavated, edged all round by black, then a row of orange lunules, with very little yellow about the edges of some of them, then yellow discal band, cut near posterior side by a black line; on basal area, 5 yellow spots, on a darker or redder ground than elsewhere.

Female: Similar to male. Expanse of male, 1·7 inch; of female, same. Mt. Hood, Idaho. Collected by Mr. H. K. Morrison in 1880.

10. M. Baroni, *H. Edw., "Mss." Male:* Shape of *Editha, B'dvl*, and belongs to same sub-group; color black, spotted with pale yellow and deep red; fore-wings have a marginal series of red spots, followed by two rows of yellow, and a third, bifid, yellow partly suffused red; four spots in cell alternately red and yellow from the arc; and yellow spot below cell; hind-wings have marginal series of red spots, followed by one of yellow, of red, of yellow, and a demi-row of red on anterior part of wing; three yellow spots near base; fringes alternately black and yellow. Under side light red, with bands of pale yellow, the red largely predominating; the absence of black is peculiar and characteristic of this species; both margins bordered by a continuous red band, followed by crescent yellow spots, confluent on hind-wings, edged narrowly externally on fore-wings by black and on both sides on hind-wings; fore-wings have a second yellow series edged on inner side by black, yellow on both sides arc, and yellow bands across cell, and spots near base, edged black; on hind-wings the third series from margin is red, narrowly edged on three sides by yellow, then a red band and a yellow one, the latter edged black on inner side; basal area red with four separate yellow spots, all black edged.

Female: Very like ♂; in some examples the red bands of upper side are broader and the yellow arc much suffused red; under side characterized by same absence of black. Expanse of ♂, 1·5 to 1·7 inch; of ♀, 1·7 to 1·9 inch. Northern California.

5. M. Nubigena, *Behr.* *Male:* Upper side banded with red and yellow on black ground; fore wings have the marginal row of spots red; the next either red or yellow, or a mixture of both; the third yellow; the fourth red, the inner first being yellow, or this row is wholly red, or both colors mixed; in cell four spots, red and yellow alternating, and a yellow spot and two red ones below cell; hind wings have the outer three rows red, or the second is yellow or mixed; the fourth or mesial row yellow, the outer half or third of the spots red; four yellow spots on the black basal area. Under side red, the yellow spots repeated; on hind wings the second row is yellow, the third red edged yellow on all sides but posterior; the mesial band divided by a black line, and the outer part thus cut off is red or reddish, the rest yellow; basal area red, with five spots disposed as in *Chalcedon.* Expanse, 1 2-10 to 1 1-2 inch. Nevada and Colorado. There is much variation in this species, many examples from Colorado being diminutive and wholly of dull red, the third row on primaries above somewhat yellowish.

6. M. Quino, *Behr.* Upper side as in *Chalcedon*, but the series of sub-marginal spots on fore wings is red, and of marginal on hind wings yellow suffused red; the fourth series on fore wings (bifid) almost wholly red, the third series on hind wings all red. The yellow part of the under side of hind wings is much paler than in *Chalcedon*, and the yellow band at base is dissolved into six distinct but nearly connected spots. It differs also in coloration of club of antennæ. Expanse of male, 1 8-10 inch; of female, 2 inches. Cal.

7. M. Editha, *B'dvl.* *Male:* Upper side pale black, banded dull or brownish red and ochre-yellow; both wings have a red marginal row of spots; on fore wings followed by three yellow rows, the third is bifid; in cell four spots red and yellow alternating; hind wings have second row yellow, third red with yellow dot in middle of most spots, the fourth yellow; an obsolescent demi-row of red on anterior half; four yellow spots on basal area, often on part obsolete. Under side brownish red and dull yellow, with much black; the second series of spots on hind wing are large yellow lunules; the third series small red spots with yellow centres and edges, and this row stands on broad black area; the fourth series is composed of long yellow spots, making a broad band, and is unequally cut by a black line which runs from margin to margin; following this band is a red band stopping at or near the sub-median nervule; then a yellow band entirely across basal area and a yellow spot outside of it at end of cell; next base red.

Female: The red is more brownish; the bifid band on fore wings and the fourth on hind wing partly suffused red; under side like male. Expanse of ♂, 1 1-2 inch; of ♀, about 2 inches. Cal.

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Proceedings of the Entomological Society of Philadelphia.—(*Continued.*)

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TO BE CONTINUED.

ANISODACTYLUS, *Dej.*

Dr. Horn in Trans. Am. Phil. Soc. Nov. 5, 1880, published an extensive review of the Anisodactylus, from which we give the following extract, refering the student to the Doctor's complete treatise.

A. Terminal spur of anterior tibiæ trifid.

a. Posterior tarsi slightly flattened, shorter than the tibiæ, the first joint very little longer than the second. Hairy species. Elytra striate, intervals biseriately punctate, dorsal puncture not distinct. *(Dichirus.)*

Thorax very distinctly narrowed behind, the sides arcuate.

Hind angles of thorax obtuse. Intervals of elytra very irregularly biseriately punctulate. Middle tarsi ♂ not pubescent beneath.

Posterior and middle tibiæ ♂ coarsely tuberculate externally. Sides of thorax beneath impunctate.................................. **1. strenuus,** Horn.

Tibiæ spinulose externally. Thorax beneath punctate .... **2. dilatatus,** Dej.

Hind angles of thorax distinct. Intervals of elytra very regularly and closely bistriately punctulate. Middle tarsi ♂ with joints 2—4 pubescent beneath.

Spurs of hind tibiæ slender and acute.

Hairs of surface short and erect. Thorax beneath with few obsolete coarse punctures .... **3. obtusus,** Lec.

Hairs of surface long and scarcely erect. Thorax beneath with numerous coarse and deep punctures .... **4. pilosus,** n. sp.

Spurs of hind tibiæ short, broad and dilated at tip.......... **5. immanis,** n. sp.

Hind angles of thorax sharply rectangular .... **6. brunneus,** Dej.

Thorax scarcely narrower at base, sides feebly arcuate, hind angles obtuse. Clypeus with one setigerous puncture on each side. Middle tarsi ♂ pubescent beneath. Feebly pubescent............ .... **7. piceus,** Menet

b. Posterior tarsi slender, as long as the tibiæ, the first joint nearly as long as the next two together, Glabrous species. Elytra striate, intervals impunctuate, a distinct dorsal puncture. *(Triplectrus.)*

Clypeus with one setigerous puncture on each side, prosternum at middle smooth, not pubescent.

Surface shining.

Surface with metallic luster, æneous, legs and antennæ pale. **8. harpaloides,** Ferte

Surface black, shining, legs black .... **9. dulcicollis,** Ferte.

Surface opaque, very distinctly alutaceous.

Form elongate parallel, thorax not narrowed in front, widest near the middle. **10. opaculus,** Lec.

Form more or less oval, thorax narrowed from base to apex, widest at base. **11. rusticus,** Say.

Clypeus with two setigerous punctures on each side, prosternum at middle punctured and pubescent.

Surface opaque, form elongate, thorax nearly as wide at apex as at base.
12. carbonarius, Say.

B. Terminal spur of anterior tibiæ dilated at middle. *(Anisodactylus.)*

a. Posterior tarsi slender, equal to the tibiæ, first joint long; first joint of middle tarsus ♂ pubescent at tip. Black species, glabrous; elytra striate, often very finely; second stria with a dorsal puncture.

Clypeus on each side with one setigerous puncture.

Surface opaque, elytra feebly striate, especially at tip.

Hind angles of thorax obtuse, sides regularly arcuate, base as wide as the elytra.. **13. furvus**, Lec.

Hind angles of thorax sharply rectangular, sides of thorax slightly arcuate posteriorly, base narrower than the elytra (Pacific coast species.)

Intercoxal process and middle of second abdominal segment punctured, punctures with short setæ. Metasternum front and behind punctured.

Thorax feebly narrowed posteriorly, basal impressions very feeble, surface entirely punctured...... .... **14. semipunctatus**, Lec.

Intercoxal process and metasternum smooth.

Thorax with broad but very shallow basal impressions. Elytra broad, sides distinctly arcuate........................ **15 consobrinus**, Lec.

Thorax with rather deep linear impressions. Elytra nearly parallel.
16 californicus, Dej.

Surface shining in both sexes, elytra more deeply striate.

Elytral intervals feebly convex, quite distinctly but sparsely punctulate, elytra oblong, sides nearly parallel, surface feebly shining. **17 interpunctatus**, Kby.

Elytral intervals convex, smooth, elytra oval, sides arcuate, surface shining; form more robust................................. **18 agricola**, Say.

Clypeus on each side with two setigerous punctures.

Hind angles of thorax obtuse.

Side margin of thorax very distinctly depressed and with the base punctulate.
19 Harrisii, Lec.

Side margin of thorax scarcely depressed .... **20 nigerrimus**, Dej.

Hind angles of thorax distinct, nearly rectangular.

Elytral intervals distinctly but sparsely punctulate, sides of elytra nearly straight, subparallel...................................... **21 nigrita**, Dej.

Elytral intervals smooth, shining, sides of elytra distinctly arcuate, form more robust...................................... **22 melanopus**, Hald.

b. Postertor tarsi flattened, first joint short; first joint of middle tarsus ♂ glabrous beneath; bi-colored or metallic species; elytra striate, dorsal punctures distinct,

Clypeus with one setigerous puncture on each side.

Color variable, elytra ♀ subopaque and often ferruginous with discal piceous space. Intervals impunctate .... **23. nivalis**, n. sp.

Clypeus with two setigerous punctures on each side.
  Intervals of elytra impunctate, elytra in part at least and legs testaceous.
    Thorax piceous, testaceous at the sides. .... **24 discoideus,** Dej.
    Thorax entirely piceous .... **25. baltimorensis,** Say.
  Intervals of elytra alternately punctulate
    Punctulate near the apex only .... **26. pitychrous,** Lec.
    Punctulate their entire length .... **27. porosus,** Motsch.

C. Terminal spur of anterior tibiæ slender.

a. Elytra with distinct dorsal puncture; smooth, striate; first joint of middle tarsus ♂ glabrous beneath or with a very small pubescent space; posterior tarsi variable, more or less metallic species, *Amara*—like. *(Haplocentrus.)*
  Posterior tarsi slender, the first joint fully equal to the next two. Metasternum at sides and intercoxal process smooth.
    Thorax scarcely wider at base than apex. First joint of middle tarsus ♂ glabrous beneath. Species oblong .... **28. laetus,** Dej.
    Thorax broader at base, as wide as the elytra. First joint of middle tarsus ♂ pubescent at tip. Species oval. .... **29. cœnus.** Say.
  Posterior tarsi distinctly flattened, the first joint shorter than the next two. Metasternum at sides and intercoxal process punctate.
    Sides of thorax behind nearly parallel, hind angles rectangular. Middle tarsus of male with first joint very slightly pubescent at tip. . . **30. amaroides,** Lec.
b. Elytra without dorsal puncture, subopaque, finely pubescent, densly punctulate, striate, but without distinct dorsal puncture: first joint of middle tarsus ♂ pubescent over half its surface. Black species.
  Thorax as wide at base as apex, hind angles rounded, intervals of elytra alternately with coarser punctures, irregularly placed Femora black, tibiæ and tarsi pale.................................. .... **31. sericeus,** Harr.

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BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. III. BROOKLYN, FEBRUARY, 1881. No. 10.

Description of a New Aplodes.

By Edw. L. Graef.

Among other specimens of lepidoptera collected by Mr. H. K. Morrison in Colorado was one which proved new, and a description of which I append :

Aplodes junctolinearia, *sp. nov.*

Male : Size and shape very much as *A. mimosaria*, but with wings somewhat sharper. Wings pea-green, slightly striated with white, more decided on secondaries ; thorax pea-green ; head and abdomen white. Front, second joint of palpi, and first pair of legs roseate.

Two slight white transverse lines on primaries, the inner curved toward the base at costa ; the outer almost straight and parallel to margin. The two white lines on secondaries are curved, the inner outwardly and the outer inwardly, and connect at about one-third expanse of wing from inner margin, so as practically to form but one line in the shape of a horse-shoe, the heels of which rest on the anterior margin.

Beneath paler, the lines faintly reproduced.

This is the only species I have met with in which the lines of secondaries do not extend from margin to margin, and can by this peculiarity be easily distinguished from any of its congeners.

Habitat, Colorado. Three males in collections of Henry Edwards, F. Tepper, and E. L. Graef.

Description of the Laivæ of Pterostichus lucublandus and Pt. mutus, *Say.*

By F. G. Schaupp.

Length of larva, 12 mm.

Form stout, elongate.

Color above brown, beneath light dirty gray, head and thorax shining, mouthparts and legs pale yellow.

Head subquadrate, slightly narrower at apex than at base, sides almost parallel, angles rounded.

Eyes like those of Platynus.

Antennæ four-jointed, longer than the head or the maxillæ, basal joint longest, with a tooth near the apex at the inner side ; second joint half as long, rather stouter at apex ; third nearly as long as the first, near the apex on the outside furnished with a small bud-like process, with short, stout bristles at tip ; the fourth about as long as the second, but much more slender.

Mandibles slightly arcuate, with a tooth near the middle.

Maxillæ, the long cardinal piece thicker at apex than at base, the palpus four-jointed, first joint very short, stout ; second twice as long but more slender ; third one-third longer than the second ; fourth one-half the length of the third, very slender ; lobe two-jointed, joints nearly equal in length, but basal much stouter.

Mentum bi-lobed, broadest before the apex, angles rounded, supporting the ligula with the lobes, the first joint of which is long and stout, the second short and slender, the median terminal prolongation between the lobes with one bristle.

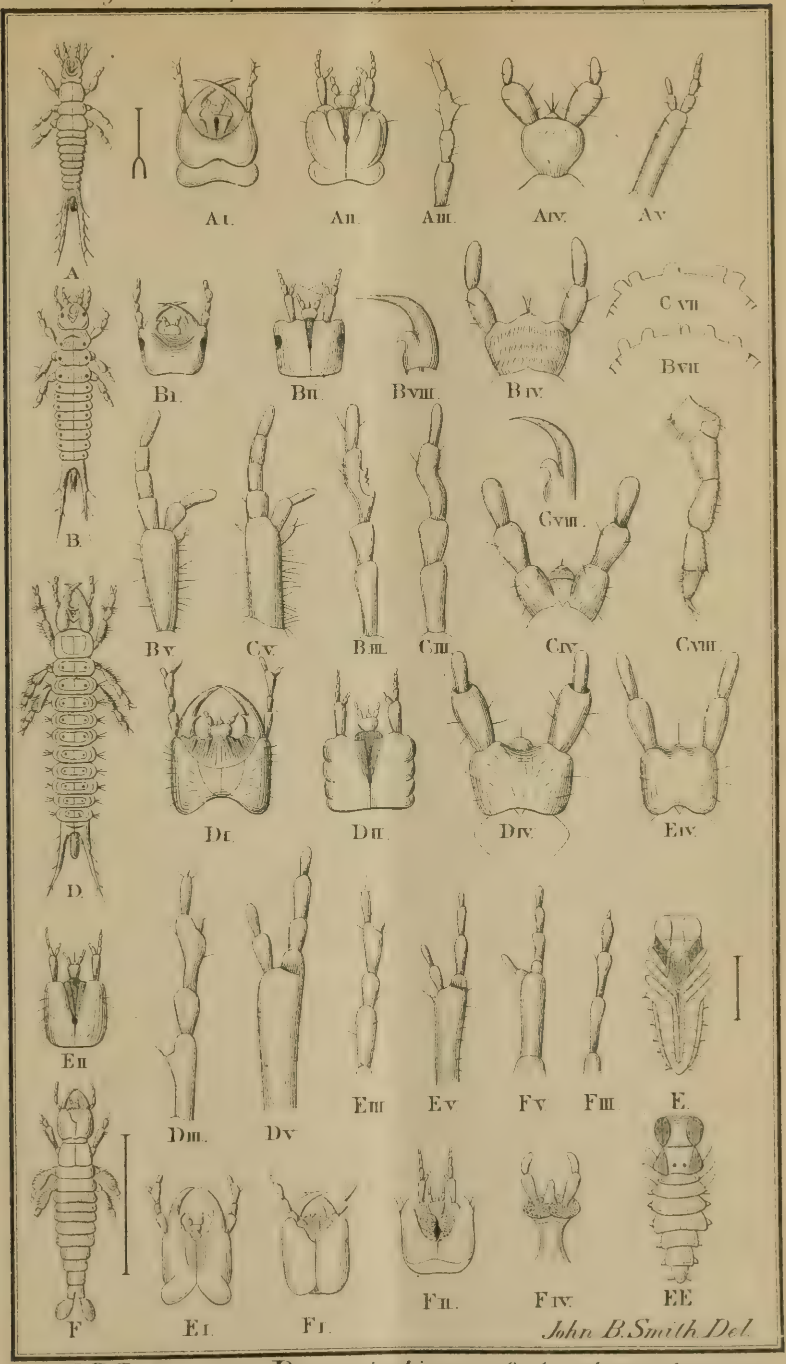
Prothorax sub-quadrate, somewhat broader than the head, broader than long, sides nearly parallel, with ante-basal and ante-apical transverse lines ; median longitudinal line distinct.

Mesothorax transverse, shorter but just as broad as prothorax, with a faint ante-apical emargination ; an impressed puncture on both sides of the scutes and a median longitudinal line.

Metathorax similar, but the ante-apical emargination is obliterated.

Abdominal segments furnished with three bristles at the sides, transverse oval gradually decreasing in width ; the eighth is rather suddenly narrowed ; the ninth forms a tubular narrowly annulate appendage, beset with short stiff bristles ; above two long slender lateral appendages also beset with bristles.

Spiracles as in Dicælus, also the scutes beneath.



John B. Smith Del.

F. G. Schaupp. Descriptions of coleopterous larvae.

Legs. The anterior leg has beneath the two claws two dull teeth. Beside this I can see not much difference in the legs of any of the carabideous larvæ I have had under observation.

A number of these larvæ were found under cow-droppings, evidently feeding on pupæ of Aphodius, which they sucked also in confinement. One found August 9th pupated August 26th, and developed September 5th; another captured same day, August 9th, pupated August 18th, and developed August 29th. They require after the development two days to become of full color, first being light brown. The first-mentioned species was kept after development for some days in a round box feeding on veal, and once falling out of the box ran around in small circles, as it had done all its lifetime before. Custom of life!!

2. Pterostichus mutus. *Say.*

Larva very similar in general appearance to the preceding, but differing as follows: Head longer than broad, the mandibles more slender and acute, the cardinal piece of the maxillæ has a distinct tooth with two stout bristles below the insertion of the lobe, the second and third joints of the palpi are nearly equal; the ligula is in this species longer than broad, while in *lucublandus* it is broader than long; the joints of labial palpi nearly equal in length and also in thickness, while in *lucublandus* the basal joint is twice as long and thick as the second; basal joint of antennæ lacking the inner tooth.

Several larvæ were found together with those of *lucublandus* under the same circumstances. One found July 17th pupated August 1st, developed August 8th; another found July 21st pupated July 31st, developed August 7th; thorax, tibiæ and tarsi became brown, while the coxæ and abdomen remained white. August 8th at 6 P. M. it was of full color.

EXPLANATION TO PLATE.

A. Larva of Platynus extensicollis, *Say.*
B. " Chlænius leucoscelis, *Cher.*
C. " Chlænius laticollis, *Say.*
D. " Pterostichus lucublandus, *Say.*
E. " Pterostichus mutus, *Say.*
F. " Staphilinus valpinus, *Nordm.*

I. Head above. II. Head beneath. III. Antennæ. IV. Ligula. V. Maxilla. VI. Mandible. VII. Front. E, E. Pupa of E.

The descriptions of A and F will be contained in the following number.

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TO BE CONTINUED.

BULLETIN

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VOL. III. BROOKLYN, MARCH, 1881. No. 11.

Description of the larva of Platynus extensicollis, *Say.*

By F. G. Schaupp.

Length of fullgrown larva 8 mm: length of pupa 7 mm.

Form elongate.

Color. Base of antennæ and anterior part of the head rufous, mouthparts, legs and the last three fourths of the anal appendage pale yellow, head and thorax black, the scutes of abdominal segments above brown, beneath lighter.

Head hexagonal, constricted before the base, nearly as broad as long, above slightly convex, angles rounded.

Eyes small, sub-oval, six on each side in two rows, situated behind the insertion of the antennæ with two long bristles, one before the eyes, the other behind.

Antennæ fourjointed, inserted on the anterior angles, shorter than the head, slightly longer than the maxillæ, first joint stout, little longer than the 2d, 3d and 4th, which are of equal length. The third is thickened on the outside near the apex, the fourth is the most slender; all are set with a few long bristles.

Mandibles arcuate with one tooth near base.

Maxillæ free. Upon the long cardinal piece are the usual appendages, the exterior (palpus) consists of four joints, first stout and short, second somewhat longer, third and fourth shorter and more slender; the inner (lobe) has two joints, the first stout, the second conical, much more slender, mentum bilobed.

Mentum transversely oval without tooth; supporting the pyriform ligula, narrowest at base, broadest at middle; palpi two-jointed, the basal very long and thick, the terminal much more slender and shorter; between the two palpi is a triangular prolongation set with three bristles.

Prothorax glabrous, longer than broad, broader than the head, narrower at apex than at base, sides arcuate, front angles obliquely truncate, hind angles slightly distinct. At the sides and the apex there is a small margin, at the base a broad one with longitudinal furrows.

Meso- and *Metathorax* considerably shorter than prothorax, with antebasal line; all angles obtuse; glabrous.

Abdominal segments gradually narrower towards apex, the first the largest, 2d to 7th about equal, 8th much narrower, the 9th the narrowest with a rather stout and short tubular prolongation and the long hairy fork above. The abdominal scutes covering the whole surface are divided by a longitudinal median impressions (as well as the thoracic segments) and are covered with erect hairs.

The scutes beneath are aranged like in Dicaelus, Spiracles as in Dicaelus.

At the excursion of the members of the Brooklyn Entomological Soc. May 30th I found at the edge of a brook hidden in the ground among others two small carabideous larvæ which appeared when I poured water copiously over the banks. They did not touch meat in confinment, but sucked eagerly scarabaeide larva. June 6th one transformed into a very small pupa. I should have taken the larva for that of *Ardistomis viridis*, as the species together with *Omophron americanum*, *Nebria pallipes* and *Platynus extensicollis* were found at the same spot. The larva of Omophron is very queer shaped and I thought the larvæ and pupæ of the other species must be much larger, but June 11th the imago developed and proved to be Platynus extensicollis, head and thorax bright green, body and elytra very light brown.

Description of the larva of Staphilinus vulpinus, *Nordm.*

By F. G. Schaupp.

Length 18–20 mm.

Form elongate, widest at middle.

Color. Head and thorax brunneus, abdomen above dirty grey, beneath lighter.

Head oblong, sides nearly parallel, angles rounded, frontal margin with five teeth, the middle one the smallest, and the three interior ones nearer to each other.

Eyes four on each side.

Antennae fourjointed, longer than the mandibles, first joint short, conical, second much longer, club-shaped; third three fourths of the length of the second, about the same shape, fourth joint one half the length of the second, thickest near the middle, at the tip there is a small prolongation seemingly a fifth joint, surrounded by a few bristles.

Mandibles simple, elongate, arcuate.

Maxillae moderately long, cardinal piece long with sides parallel, maxillar palpus with first joint very short and thick, second more than twice as long than the first, and slightly clavate; third the same shape, but shorter and slender than the second; fourth nearly like the third, but a very little shorter. Lobe with basal joint short and very thick, second joint more than twice as long as the basal joint and slender.

Mentum triangular, broadest at base with the *Ligula* which is constricted at the middle, truncate at tip, covered with pulvilli, upon it is at the middle a long and acute tooth and the labial palpi with the basal joint long and clavate and the second nearly two thirds as long as the basal, but more slender and terminating rather acutely at tip.

Prothorax slightly broader than long, and narrower than the head, at apex narrower than at base, sides slightly arcuate, hind angles acutely rounded; antebasal and median impressed lines.

Meso- and *Meta-thorax* transverse, shorter and broader than prothorax.

Abdomen with the joints gradually decreasing in width, the last nearly tubular with very remarkable tergal appendages, consisting of two white oval, bladder-like processses, set at the outer sides and at the apex with fine hairs,* and the usual ventral tubular prolongation.

Spiracles as in maculosus (see Bull. I. p. 42.) nine at each side.

One larva found July 17 in a rotten log, died Aug. 21; another found Sep. 6, under a stone, pupated Sep. 15, died Sep. 24; a third one found under a stone Aug. 5, pupated Sep. 3; became black and shrunk Sep. 16, but developed Sep. 19.

———o———

In the plate of No. 10. *B VIII. and C VIII. means mandibles and C VIII. also leg. Also read vol. III. p.* 26, *line* 20: *"The front of laticollis has five teeth" instead of "the labrum of loticollis has five teeth."*

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* Seeing first these queer anal appendages I took them for the effect of a disease, as they look nearly like the cocoons of some Hymenoptera on the skin of caterpillars.

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Geo. H. Horn, M. D., Descriptions of new species of U. S. Coleoptera, 1874, pp. 20–43, with Syn. tables of Aplastus, *Malachius* (part), Stibia, Corphyra, (Pacific species only).

J. L. Leconte, M. D., Description of new Coleoptera, chiefly from the Pacific Slope of North America. 1874, pp. 43–72. (Synopsis of Silis.)

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J. L. Leconte. M. D. Note on the Genus *Pleocoma* Lec. 1874. pp. 81–84. (with synopis).

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Geo. H. Horn, M. D. Synopsis of Species of *Cymatodera* and *Trichodes* of the U. S. 1876, pp. 220–232.

Geo. H. Horn, M. D. The sexual characteres of N. A. *Cicindelidæ* with notes on some groups of Cicindela, 1876, pp. 232–240. (desc. one new Cicindela, with plate).

TO BE CONTINUED.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. III. BROOKLYN, APRIL, 1881. No. 12.

A New Species of Notodonta.

By Edw. L. Graef.

Notodonta Simplaria, sp. nov.

Male. Cinereous. Head and thorax blackish cinereous; tuft dark; abdomen light cinereous. Antennæ light brown.

Primaries dark cinereous powdered with light grey especially marked in apical region. Three transverse dentated lines of black cinereous edged with dirty white. A discal transverse dash of black, bordered with dirty white. Fringes cinereous, darker at veins; a sub-basal line of black. Tuft on inner margin slight and black.

Secondaries light cinereous somewhat darker at exterior margin and anal angle. A wavy band of lighter shade extending from costa to anal angle. Discal mark slight.

Beneath, light cinereous powdered with white, the posteriors lighter. A slight transverse line on both wings, darker at the costa. Discal mark on secondaries heavier than above.

In size N. simplaria is about the same as N. basistriens but considerably heavier and wings more angular.

From one male taken in Catskill, N. Y. Aug. 1879.

Type in my collection.

A New Geometer from Colorado.

By Edw. L. Graef.

Lithostege virginata, spec. nov.

Female; primaries dead pearl white; a slight transverse anterior band of blackish rays. Transverse posterior heavier, especially near the median cell, and slightly covered with greyish atoms. Fringes white, checkered with black at the veins; a faint sub-basal line of blackish.

Hind wings uniform light smoky ash; fringes long.

Beneath, all the wings smoky ash, the primaries somewhat darker, especially on the costa. The transverse posterior appears through faintly, and on the costa forms a black spot. A sub-apical patch of white enclosing a smaller one of ground color. Fringes of primaries as above, of secondaries ash color. Expands 30 mm.

Hab. Colorado. From one female in Coll. Edw. L. Graef.

A Hint for Collecting.

Mr. W. Petersen writes in Stettiner Entom. Zeitschrift March, 1881 page 245 in an article, "A few words about the occurrence of Heteroceri in tropical climates" that common baits with sugar etc. did not work, but that he found by chance that fish partly decayed, hung up to dry, attracted an immense number of Macros and Micros, that he collected thereby on one day 600--700 specimens, that he could have taken many more, but he took only the perfect ones. F. G. Schaupp.

On Collecting Elmidae.

Pieces of wood placed in running water fastened to the ground, or weighed down by stones on rocky ground to prevent their being washed away, prove very attractive breeding places for Elmidæ. Brooks running through woods are best suited and pine or cedar should not be used, as it takes a long while before insects settle on it, very likely on account of the strong odor. Take the wood, examine it very carefully in the sun, as many of the Elmis are very small and will not be seen, unless they move out of the crevices and cracks, when exposed to the warmth and light.

Last year I collected in the vicinity of New York City, the following Elmidæ in the manner above described, Elmis bivittatus, Lec., 4 notatus, Say., ovalis, Lec., nitidulus, Lec., pusillus, Lec., crenatus, Say., bicarinatus and very likely a new species allied to the last; Macronychus glabratus, Say. and Ancyronyx variegatus, Germ., (found from April to Dec.)

W. Julich.

Melitæa, Fabr.

11. M. Rubicunda, *Hy. Edw.* "*Mss.*" *Male*: Wine black on upper side; forewings have a marginal deep red row, a second of minute spots either of same red, or of mixed red and yellow, sometimes obsolete; the third row small yellow; fourth wholly red, with a yellow fork on inner side against cell; four spots on cell, red and yellow alternately, the yellow suffused red. Hind wings have three red rows, counting the marginal, with no yellow, or the second is sometimes yellow, or it is obsolete; the fourth row, across middle of disk, yellow, but sometimes the outer half or less of each spot is red; the fifth is a demi-row of red on anterior half wing; four yellow spots on basal area and sometimes a fifth on inner margin; fringes alternately black and yellow. Under side red of a darker shade than Baroni, and there is much more black, all bands being edged black, and rather broadly; hind wings have a red marginal band, then a row of yellow lunules, followed by a red row, which have sometimes a few yellow scales about anterior edges, but as often none, then a red row and yellow; basal area red with four yellow spots, the yellow varies in shade from bright to pale. Size of Baroni.

Female: Expands 1·8 inch. All colors on upper side duller, the red brownish, the yellow spots often almost covered with red; under side also has the red dull or brownish, the yellow deep, rarely pale; the black edgings conspicuous. Northern California.

Note. Mr. Baron has bred "Baroni" and "Rubicunda" from the egg.

12. M. Helvia, *Scudder.* Sex not stated, described from one specimen taken at the Ramparts, Alaska. Allied to "Anicia". Upper side blackish-fulvous, covered wtth dull white and fulvous spots. Beneath cinnamon-brown, hind wings with a sub-marginal row of large white lunules, and a band across disk, within this four or five whitish spots. Expanse 1·5 inch.

13. M. Sterope (Acastus,) *W. H. Edw.*, *Male:* Upper side blackish-brown with white spots; on fore wings two marginal rows of small spots, anterior to these a bifid row of large spots; hind wings have a marginal row of white crescents, preceded by a row of points, and a third row of large spots, discal. Beneath, hind wings have a marginal row of large white crescents, before this a white band which contains a series of small ochraceous spots, each enclosing a white point; across disk a second band of long white spots; basal arae ochraceous enclosing six white spots.

Female: Has both hind margins of upper side bordered by ochraceous crescents and the second row of spots is partly replaced by the same color. Expanse of male 1·8 inch, of female 1·9 inch. Oregon.

Errata. On page 80, No. 9. ninth line for "M. Perdiceas" read "M. Perdiccas," and on eighteenth line for "Mt. Hood, Idaho" read "Mt. Hood; Idaho."

14. M. Palla, *B'dvl.* *Male:* Upper side black crossed by several rows of bright red fulvous spots; underside of forewings pale fulvous, with black markings, a marginal row of yellow crescents, double near apex; of hind wings, first a row of marginal irregular yellow crescents, then a row of red fulvous spots, then a band of yellow spots; from there to base fulvous with a few irregular yellow spots.

Female: Brownish-black with the spots yellow and slighter than in male; below much the same as male. Expanse of male 1·5 inch, of female 1·75. inch. California; Nevada.

15. M. Hoffmannii, *Behr.* *Male:* General markings much like *Palla*, but with the basal area black and the black markings towards outer margin much slighter, giving it here a more fulvous appearence; the median bands on both wings broader and paler. Under side much like *Palla*, but the yellow markings are more prominent.

Female: Much the same as male. Expanse of male 1·35 inch, of female 1·45 inch. California; Nevada.

16. M. Whitneyii, *Behr.* *Male:* General markings much like *Palla*, spots light fulvous and larger; under side of primaries pale fulvous, a marginal row of broad yellow spots, double near apex; secondaries with a marginal row of long yellow crescents, other markings very much as in the preceding species, but the yellow more prominent and the yellow marginal spots have a silvery lustre.

Female: Much the same as male, but with the yellow on under side of secondaries more prominent. Expanse of male 1·5 inch, of female 1·7 inch. California.

17. M. Gabbii, Upper side of male similar to *M. Palla Bd.*, black-brown crossed by several rows of red-fulvous spots; under side of fore wings deep fulvous, the apical area black; the marginal lunules next apex silvered; hind wings banded with silver spots, namely a sub-marginal and a discal row of such spots, and six spots on basal area, the rest of basal area being fulvous; the extra discal area mostly dead leaf-brown, enclosing a row of small fulvous spots which have black central points.

Female: Similar to one of the forms of *M. Palla Bd.*, color dull brown, the two outer rows of spots on hind wings and all of those on fore wings dull yellow, more or less suffused with red; the discal row on hind wings yellow-buff. Beneath, fore wings have a yellowish discal band and spot on cell; spots silvered as in male. Expanse of male 1·2 inch, of female 1·5 inch. Southern California.

Remarks on Smerinthus Myops,

By Geo. D. Hulst.

We had last year, what as compared with our past experience has been a very rapid development of this insect.

The eggs were laid May 24th; the larvæ emerged May 30th; 1st moult was June 1st; 2nd moult, June 6th; 3rd moult, June 11th; 4th moult, June 16: Larvæ left food plant June 24th. Imago emerged July 8th. Thus the whole history of the insect was gone through in about 6 weeks. The great heat of the season probably was the cause of the rapid development.

Last year we had imagines emerge from the second brood of Myops. And as the wild Cherry the food plant, retains its leaves very late in the Autumn we could from these easily have raised a third brood. Indeed we have found larvæ in the open field in October after heavy frosts. Early in the season and during the summer, the larvæ after the earlier moults retire well down towards the base of the branches on which they feed; but late in the fall feed openly towards the end of the branches. If we were scientific, we would explain this as follows; in the summer, enemies in the shape of ichneumons are plentiful and always on the alert; in the Autumn, these have so to speak, "retired from business" for the year. During the prevalence of the parasites the larvæ seek the cover of the inner bush to avoid their enemies, and appear fearlessly when their enemies are gone. But, not being scientific, (i. e. not being under the bondage of the dogmas of Darwinism, or staitened by the requirements of the theory of evolution, and not being compelled therefore forcibly or otherwise to explain all things on the principle of the "survival of the fittest,") we think the explanation is only that the shade is more comfortable in summer to the larvæ, as the sunshine is in frosty weather in Autumn. And like some of us of the genus Homo, (now in our Caterpillar stage of existence), they choose to be as comfortable as they can.

INFESTED TWIGS.

When a branch or a twig of a tree now gets its foliage and the leaves dry up and shrink in a few weeks, it is a proof that it is infested by larvæ. Cutting off such branches and placing them in a box or in an empty well closed room, rare insects may thus be procured; when there is but one window, on the inside lined with wire-screen, the insects may be taken there easily. Carl Fuchs.

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Vol. V. *Continued.* **Geo. H. Horn, M. D.** Notes on some Coleopterous remains from the bone cave at Port Kennedy, Penna. 1876, pp. 241-245.

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Vol. VI. **Geo. H. Horn, M. D.** Synopsis of the genera and species of the Staphylinide tribe *Tachyporini* of the U. S. 1877, pp. 81-128. with one plate.

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Vol. VII. **Geo. H. Horn, M. D.** Notes on some species of *Hister*, 1878, pp. 1-2.

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Notes on some genera of *Cerambycidae* of the U. S. 1878, pp, 41-50. (Synoptic tables of Pogonocherus, Mecas, Oberea, Tetraopes, Tetrops.)

Contributions to the Coleopterology of the U. S. No. 2. 1878, pp. 51-60. Synoptic table of *Calospasta.*

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Synopsis of the species of *Staphilinus* and the more closely allied genera inhabiting the U. S. 1879, pp. 185-200.

Synopsis of the *Monotomidæ* of the U. S. 1879, pp. 257-267.

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Vol. VIII. **Geo. H. Horn, M. D.** Notes on the species of *Asaphes* of Boreal America. 1880, pp. 69-75.

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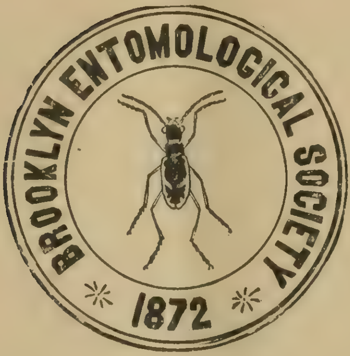


VOLUME IV.

BROOKLYN, N. Y.

MAY 1881. —— APRIL 1882.

BULLETIN
OF THE
Brooklyn Entomological Society.

VOL. IV. BROOKLYN, MAY, 1881. No. 1.

Descriptions of New Lepidoptera.

By FRED. TEPPER.

Sphinx Albescens, *nov. sp. Fig. 3.*

Expanse $2\frac{3}{4}$ inches. Head light grey; antennæ white above, dark grey beneath; collar and shoulder covers whitish grey, the latter heavily edged with black inwardly; Thorax deep blackish grey; abdomen grey with a black dorsal line, sides banded white and black; beneath uniform dark grey, with a black ventral line; legs grey.

Primaries grey, shaded with cinereous white along costa from base for about half of the wing; a rather heavy black apical line, and one near outer margin, the first shaded inwardly and the last outwardly with whitish grey, between these lines and the light costal field are several black streaks. Underside grey, powdered with white along costa, at apex and outer margin; the black apical line is reproduced, and there is a wavy dark line, double at inner margin, and bordered outwardly with whitish grey.

Secondaries white at base, followed by a narrow black band, then a narrow white one, both drawn to a sharp point at anal angle; beyond this is a heavy black band shaded with grey towards exterior margin. Underside much as above, but the bands and shadings are not so heavy.

Fringes of all wings grey.

One male from Colorado, taken by Mr. H. K. Morrison, in my coll.

This species is allied to "Vashti, Strecker," but the dark thorax and the peculiar formation of the bands on secondaries will suffice to easily distinguish it.

Hypena Albopunctata, *nov. spec. Fig. 5.*

Expanse 1¼ inch. Head, thorax and antennæ dull brown; palpi very long; abdomen paler.

Primaries dull brown with a whitish zig-zag basal line, a median wavy whitish line leaving the discal spot well defined with two elevated black points, and a row of sub-marginal white dots pointed inwardly with black; between the median and basal lines are two elevated black points, the upper one shaded whitish outwardly; fringes alternately dark and light brown.

Secondaries uniform pale brown, edged with a narrow black line; fringes concolorous.

Underside pale brown, darker on primaries; secondaries have a faint dark median line.

One male from Wash. Ter., collected by Mr. H. K. Morrison, in my collection.

This species can be easily recognized by its uniform dull brown color with the whitish lines and row of white dots on primaries.

Drynobia Tortuosa, *nov. sp. Fig. 2.*

Expanse 1⅜ inch. Head and antennæ grey, the latter strongly pectinated; thorax grey, collar narrowly edged with white; tufts dark, tipped with a metallic lustre; abdomen grey, lighter on underside.

Primaries grey, sparsely dusted with brown and white scales; white at extreme base, followed by three black dashes; two irregular transverse black lines, the anterior one strongly dentated and resting on the spur at inner margin; near apex three black lines, and two towards inner margin, the lower one crossing the t. p. line; fringes grey, darker at veins. Underside greyish white, darker at apex and along costa; the t. p. line is partially reproduced.

Secondaries white, abdominal edge brownish grey; fringes white, grey at veins towards anal angle. Underside whitish, with the costal border dark grey, and with the indication on costa of a dark band.

One male from Colorado, collected by Mr. H. K. Morrison. Type in my collection.

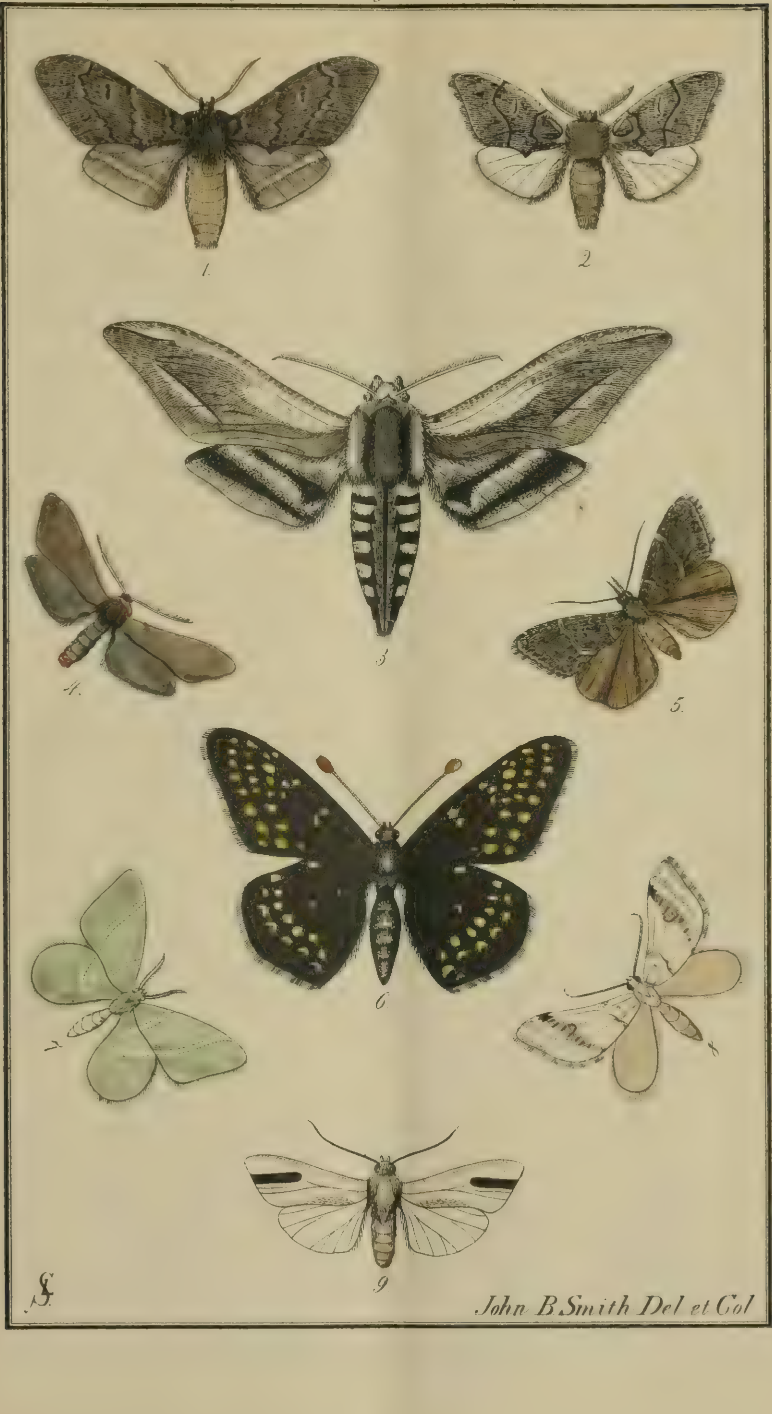
This is the first representative of the genus "Drynobia" Dup. noticed in this country; the general characters agree well with the European species, "D. Vellitaris, Rott."

Relating Catocala Pura.

By some accident it was omitted to state that the examples of *Catocala pura* Hulst, were collected by Prof. F. H. Snow who took them at Idaho Springs, Col., in 1879; at the same time he also took large numbers of other species, among them *C. Aspasia*, which has been heretofore a great rarity.

H. Strecker.

Bulletin of the Brooklyn Entomological Society Vol. 4 No. 1.



John B. Smith Del et Col

CHLAENIUS, *Bon.*

Dr. G. H. Horn's Revision Trans. Am. Ent. Soc. V, 253–276.

A.—Middle tibiæ ♂ without pubescent space at tip. Third joint of antennæ not longer than the fourth, (except in 1 and 2).
Abdomen impunctured and glabrous.
Thorax narrower at base than the elytra, sides distinctly sinuate, basal impressions deep, surface irregularly punctured.................... **1. validus.**
Thorax as broad at base as the elytra, sides not sinuate, basal impressions very feeble, surface densely punctured....................... **2. tomentosus.**
Abdomen sparsely punctured and pubescent over the entire surface........... 1.
1.—Prosternum not margined at tip, thorax not sinuate .... 2.
Prosternum margined at tip, thorax distinctly sinuate .... 3.
2.—Thorax with coarse punctures very irregularly disposed. Legs black......... 4.
Thorax more finely and densely punctured, subopaque. Legs red.......... 5.
4.—Prosternum punctured between the coxæ, elytra coarsely and rather densely punctured. Thorax as wide as base of elytra .... 6.
Prosternum impunctured, elytra finely punctured, thorax narrower .... 7.
6.—Marginal line of elytra forming an angle with the basal line, margin of thorax not thickened................................... **3. purpuricollis.**
Marginal line of elytra regularly curved at base, margin of thorax thickened, especially toward the base.
Elytral intervals alternately more convex, but similarlypunctureed. **4. alternatus.**
Elytral intervals equal.. **5. niger.**
Striæ of elytra broken into short lines............................ **6. interruptus.**
7.—Head greenish, thorax feebly bronzed, body and elytra black..... **7. harpalinus.**
5.—Thorax narrower at apex than at base, and with narrow red margin.
8. impunctifrons.
3.—Thorax with impunctured spaces or unequally punctured.
Mandibles elongate, deflexed; thorax with very coarse, deeply impressed but sparsely placed punctures.............................. **9. maxillosus.**
Mandibles normal in form.
Epipleuræ pale, thorax distinctly sinuate .... **10. circumcinctus.**
Epipleuræ concolorous, thorax not sinuate.................. **11. texanus.**
Thorax equally punctured. Epipleuræ dard.................................. 8.
8.—Elytral intervals finely muricate. Prothocacic episternum coarsely punctured.
12. pennsylvanicus.
Elytral intervals finely and sparsely punctured and not distinctly impressed.... 9.
9.—Prothoracic episterna coarsely punctured.............................. 10.
Prothoracic episterna very obsoletely punctured.......................... 11.
10.—Head and thorax green, varying to blue, shining.
Labrum emarginate,
Body above green, elytra rather densely punctulate.......... **13. floridanus.**
" bicolored, elytra very obsoletely and sparsely punctulate. **14. brevilabris**
Labrum truncate.. **15. tricolor.**
Head and thorax coppery bronze, thorax subopaqe.............. **16. nemoralis.**
11.—Thorax shining, punctures coarse and numerous........................... 12.
Thorax opaque, ponctures fine and very sparse............................ 13.

12.—Body above (head and thorax), metallic green, legs pale.
Thorax with feeble but evident sinuation. Labrum emarginate. . **17. glaucus.**
Thorax distinctly sinuate and narrower. Labrum truncate. . . . **18. simillimus.**
Thorax not sinuate. Labrum truncate. **19. nebraskensis.**
Body above black or very slightly blue. Legs usually black.
20. variabilipes.
13.—Thorax not sinuate, base evidently broader than apex. Labrum truncate.
21. vafer.
Thorax sinuate, hind angles subacute, punctures more evident. Labrum feebly emarginate. Color above green. . . . . **22. flaccidus.**
Thorax distinctly sinuate, base not broader than apex. Labrum emarginate.
23. obsoletus.
B.—Middle tibiæ ♂ with a pubescent space near the tip. Third joint of antennæ longer than the fourth.
Prothoracic epipleuræ very narrow and nearly vertical, thorax obtusely margined. . . . . 17.
Prothoracic epipleuræ normal, oblique or nearly horizontal, thorax acutely margined. . . . . 1.
1.—Abdomen either smooth at middle or over its entire surface. . . . . 2.
Abdomen sparsely punctured at middle and more densely at sides. . . . . 3.
2.—Abdomen punctured at sides only. Anterior femora of ♂ subangulate at base. 4.
Abdomen devoid of punctures. . . . . 5.
4.—Prosternum not margined at tip, feebly punctured or smooth in front. . . . . 6.
Prosternum margined at tip, coarsely punctured in front. 7.
6.—Color bright green, shining. . . . . **24. solitarius.**
Color dark blue, thorax subopaque, elytra opaque. . . . . **25. leucoscelis.**
7.—Color green, last ventral segment nearly entirely testaceous. . . . . **26. prasinus.**
5.—Prosternum feebly margined at sides of tip; episterna with coarse punctures; color violet blue, opaque. . . . . **27. cumatilis.**
3.—Metasternal episterna long, outer side longer than the anterior. . . . . 8.
Metasternal episterna short, outer side shorter than the anterior. . . . . 9.
9.—Thorax scarsely narrower at base than the elytra, sides not sinuate. . . . . 10.
Thorax narrower at base than the elytra, sides sinuate. . . . . 11.
10.—Body above green (as in *sericeus*); legs entirely pale. . . . . **28. augustus.**
Body above bluish black; tibiæ and tarsi black. **29. viduus.**
11.—Male with anterior femora subangulate at base.
Thorax as long as wide, sides distinctly sinuate. . . . . **30. æstivus.**
Thorax wider than long, sides not sinuate. . . . . **31. platyderus.**
Male with anterior femora simple. . . . . **32. diffinis.**
8.—Male with anterior femora toothed at base. . . . . **33. laticollis.**
Male with anterior femora suddenly narrower at base. . . . . 12.
Male with simple femora. . . . . 13.
13.—Legs black. . . . . **34. orbus.**
Legs testaceous. . . . . 14.
14.—Thorax very densely punctate. . . . . 15.
Thorax very sparsely coarsely punctate.
Prothorax beneath and abdomen very sparsely punctate. . . . . **35. cursor.**

Prothorax densely and coarsely punctured, abdomen moderately punctate. **36. Chaudoiri.**

15.—Thorax strongly sinuate, hind angles rectangular, base not broader than apex. 16.

Thorax very distinctly broader at base than apex, moderately or not sinuate.

Smaller species, (12.5 – 17 mm). Color green to blue, legs pale. . **37. sericeus.**

Larger, (21—23 mm). Color blackish. tarsi piceous . . . . **38. fuscicornis.**

12.—Thorax distinctly sinuate. Color and size of *fuscicornis*. . . . . . . **39. erythropus.**

16.—Color black with tinge of blue, elytra very finely striate . . . . **40. viridifrons.**

17.—Body above unicolorous, thorax feebly narrowed at base. . . . . **41. herbaceus.**

Elytra with apical third rufous, thorax coarctate at base. . . . . **42. ruficauda.**

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emarginatus, || Kby, Fauna. Am. Bor. IV, p. 23,—This must be dropped. The name is preoccupied and the type is not in Brit. Mus.

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See also Chaudoir, Monographie, Annali Mus. Civ. de Genova, VIII., '76, p. 211.

Notes on Argynnis Arge, Streck.

By H. STRECKER.

On page 27 of Vol. (III) of the Bulletin, I find the Argynnis described by myself as *A. Arge* cited as a synonym of *A. Montivago*, Behr. This conclusion, entirely erroneous, was founded, I presume, on Mr. W. H. Edwards article in Can. Ent. page 52-53, Vol. XI, where the writer says he has "well executed and colored figures of Dr. Behr's Argynnids, Nos. 4 and 5, described in Proc, Cal. Acad. April 21, 1862, sent me at that time by Dr. Behr himself." In the language of the immortal bard of California, I would "rise and explain" that though I have not the drawings, I have excepting *Leto* all the examples on which Dr. Behr's paper in the Proc. Cal. Soc. was grounded, sent to me by that gentleman himself some years ago with his own labels and numbers attached. Previous and preparatory to getting up my Catalogue in 1877–1878 I sent a number of Western Argynnidæ to W. H. Edwards to get *his* names for them, Dr. Behr's as above stated I had already; with those sent to W. H. Edwards were a number of these identical typical examples of Dr. Behr's and among those which Mr. Edwards returned to me labelled by himself as "Montivago=Egleis Bd.," and which still have his labels to them, are some of Dr. Behr's" No. 4 which I received from the latter himself and these certainly are not the same as the insect described by myself on page 114 of my Catalogue as *Arge*, neither are they the same as *Eurynome* taken first by Mr. Mead in Colorado from whom I received examples of the same catch that furnished Mr. W. H. Edward's types. Of *Montivago*, *Eurynome* and *Arge* I have long suites, certainly enough to pronounce on the validity of the species, as well as they can be pronounced on without living in the regions that produce them and studying out their life history. . .

EXPLANATION TO PLATE.

1. Notodonta simplaria, Graef. III. 96.
2. Drynobia tortuosa, Tepper. IV. 2.
3. Sphinx albescens, Tepper. IV. 1.
4. Ctenucha pyrrhoura, Hulst. III. 77.
5. Hypena albopunctata; Tepper. IV. 2.
6. Melitæa phætusa, Hulst. III. 77.
7. Aplodes junctolinearia, Graef. III. 87.
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Vol. VI. **Say.** Descr. etc. the paper in Vol. IV concluded, 1836, pp. 155-190.

Vol. X. **S. S. Haldemann.** Materials towards a history of Coleoptera Longicornia of the U. S. 1853. p. 27–67.

J. L. Leconte, M. D. Notes on the classification of Carabidæ of the U.S. 1853, pp. 363-403.

Revision of the Elateridæ of the U. S. 1853, pp. 405-508.

Vol. XI. **J. L. Leconte. M. D.** Revision of the Cicindelidae of the U. S. 1857. pp. 27–63. with one plate.

Revision of the Buprestidae of the U. S 1859, pp. 187-258. with one plate.

Vol. XIV. **Geo. H. Horn, M. D.** Revision of the Tenebrionidae of Am. North of Mexico 1871, pp. 253-404. with two plates.

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Revision of the genera and spec. of the tribe Hydrobini, 1873, p. 118-137.

Synopsis of the Histeridae of the U. S. 1873. pp. 273-360.

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Vol. XVI. **J. L. Leconte, M. D.** Tabular Synopsis of the Rhynchophora of America. 1877. pp. 1-8.

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G. H. Hubbard, and **E. A. Schwarz.** The Coleoptera of Michigan, (*with descr. of new Spec. by Leconte, the lists of Michigan Coleoptera and Hubbard's Description of the larva of Micromalthus debilis Lec, with plate*) '78, p. 593-679.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. IV. BROOKLYN, JUNE, 1881. No. 2.

Description of the Larva of Leistotrophus cingulatus.

By F. G. Schaupp.

Form resembling the larva of Staph. maculosus but stouter and shorter.

Length 16 mm.

Color. Head and thorax dark brown, shining, the abdominal segments dirty grey with two opaque square scutes above and beneath; legs, antennæ and palpi light brown, anal fork pale.

Head sub-quadrate, slightly broader anteriorly, hind angles much rounded; concave above and beneath but depressed towards the front; above near the front densly punctured; front arcuate with four teeth, the two inner simple, the two outer bifid with one strong bristle between each.

Eyes four on each side.

Antennæ above the eyes, inside of the mandibles, four-jointed, basal joint very short and stout, the second very long and slender, clavate; third joint about two-thirds the length of the second, more slender, a stout bristle about half as long as the joint above the middle, and another much shorter above that; at the inner side of the tip a small bud-like process; terminal joint one half the length of the second and very slender, with two stout long diverging bristles at tip.

Mandibles slightly arcuate, without tooth.

Maxillæ, basal joint very short and stout, cardinal joint long and stout with a short stout bristle at the middle of the inner side. And another very long one near the tip of the outer side, with a short single jointed lobe at the tip of the inner side and a four-jointed palpus at the outer side: the first very broad and short, the second and third about equal, the fourth slender and somewhat shorter.

Mentum and ligula similar to those of St. maculosus. See Bulletin I, page 42.

Prothorax longer than broad, as broad as the head, broader at apex than at front, surface smooth with an ante-basal transverse line.

Mesothorax and *Metathorax* similar but shorter.

Abdominal segments 1st to 5th nearly equal, 6th to 8th tapering gradually, the 9th very small, tubularly prolongated downwards, and with two slender appendages set with bristles on the upper side.

Spiracles. The first beneath the mesothorax and eight on the first eight abdominal segments.

Legs, stout, coxa oval with short bristles on outer side, trochanter short with but one bristle, femur with long strong bristles on outer side, tibia as long as femur with many bristles all over, tarsus short with four bristles at tip, claw slender, pointed.

One larva found August 15; pupated August 26, the imago developed September 5th (very small and somewhat deformed).

Larva found.	Transf. into pupa.	Imago developed.
July 7th	July 21st	July 30th
Aug. 15th	Aug. 26th	Sept. 5th
Aug. 17th	Aug. 28th	

Several other larvæ died after a few days: they were fed with small naked caterpillars or ants-pupæ and are very rapacious. At first sight the larvæ resemble very much the larvæ of St. maculosus, but they are much smaller.

Where to find larvae and pupæ.

On the grassy banks of rivers and brooks one may get plenty larvæ and pupæ of Coleoptera as well as the imagines by cutting off the turf and placing it under water.. In a few minutes the insects and larvæ will come up to the surface and may easily be taken. The small fish are dangerous competitors and prove in many instances quicker collectors than the biped hunter. Last year in June thus I found a great number of small larvæ and pupæ, evidently carabideous, but was not able to raise a single one.

F. G. Schaupp.

Melitæa, Fabr.

18. M. Leanira, *B'dvl.* *Male:* Ground color brownish black, fulvous at costa, with submarginal, median and basal rows of yellow spots; on primaries a marginal and discal row of red spots. Underside of primaries red-fulvous, and markings of upperside are reproduced; secondaries, a marginal row of long yellow crescents, then a black band inclosing yellow spots, then a median band of long yellow crescents; from there to base black with yellow spots.

Abdomen above black banded with yellow, below yellow.

Female: Same as male, the fulvous on primaries more prominent. Expanse of male 1·5 inch, of female 1·75 inch. California, Arizona.

19. M. Alma, *Strecker.* *Male:* Upperside bright fulvous, margins and veins black; three rows of faint yellow spots, the marginal approaching to white and bordered by black. Underside of primaries pale fulvous with pale yellow spots and a marginal and sub-marginal row of yellow spots separated by a black line; secondaries yellow, veins and margin black; a slight double band of black, disconnected near middle of wing; fringes white, black at veins. Expanse 1·25 inch. Ariz, S. Utah. Nev.

In the type figured by Mr. Strecker in his "Rhopaloceres and Heteroceres" part No. 15 the black band on underside of secondaries enclosing the yellow spots is not disconnected. In the specimen from which our description was made and which is in the collection of Mr. E. L. Graef, this band is plainly disconnected near the middle of the wing.

20. M. Thekla, *W. H. Edw.* *Male:* Upperside pale ochraceous; hind margins broadly bordered black; and near the anterior edges of these borders small buff spots; apical area of fore wings black; crossing the wing outside of cell is a band of paler spots confluent on the posterior side with the ochraceous ground, but on anterior side separated from the ground color by a black line; on middle of hind wing is a band of long narrow spots, scarcely paler than the ground, but separated on both sides from it by black lines. Underside orange, the discal band of fore wings distinct and paler; along the margin a complete row of whitish lunules; a similar row on hind wings; the discal spots whitish, on black ground; hind margins edged by a broad black line. Expanse 1.35 inch. Southern California.

21. M. Minuta, *W. H. Edw.* *Male*: Upper side orange-fulvous; both wings edged black, and in this is a series of fulvous lunules, next a

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Errata.—In Vol. III, No. 12, on page 97, first line for "Wine black" read "Wings black".

narrow common fulvous band edged anteriorly black and enclosing on costal margin of primaries a row of fine obsolescent white spots; beyond to base both wings are marked by undulating black lines; fringes white, black at tips of nervules. Under side orange; a narrow white border to both hind margins; next a row of white lunules edged black, replaced by fulvous below upper branch of median on primaries; next on primaries a row of white spots, obsolete except on anterior half; beyond to base as above; on secondaries the lunules are preceded by an orange band with a black dot on each interspace (but sometimes altogether wanting), and beyond is a white band, containing three rows of black spots, two along edges, one in middle; another white band nearer base, edged with black spots, and inner margin white.

Female: Upper side like male; below as in male, but the white row on primaries is distinct across wing. Expanse of male 1·1 to 1·25 inch, of female 1·4 inch. Texas, Southern Colorado.

22. M. Arachne, *W. H. Edw.* (*M. Treydes, Strecker.*) *Male:* Upper side closely like *M. Minuta*, W. H. Edw., paler fulvous crossed by common black lines; both wings have a submarginal row of small fulvous lunules; fringes white, black at tips of nervules. Sometimes the male is very black, all the borders and black lines being widened into bands, and the fulvous restricted. Under side as in *M. Minuta*, W. H. Edw., the principal difference being in the shape of the sub-marginal lunules, which are much excavated and allow a widening of the black marginal border; in "Minuta" the lunules are very little excavated.

Female: Upper side like the male, fulvous; under side paler orange. Expanse of male 1·2 inch, of female 1·4 inch. North and South Col.

23. M. Bollii, *W. H. Edw.* *Male unknown.* *Female:* Upper side black spotted fulvous; both wings have a sub-marginal row of ochre-yellow points or small spots, partly absent on primaries; next a common row of small orange spots, then a discal common row of long and narrow pale spots; all of primaries nearly all fulvous; below cell a rounded patch and towards base a stripe; secondaries have the cell fulvous externally; fringes alternately and equally white and black. Under side black spotted with buff and fulvous; both wings have a sub-marginal series of large buff spots; other markings of primaries much as above; secondaries have an extra-discal row of oblong fulvous spots and a discal series of buff spots corresponding to those of upper side; a large deep fulvous patch covers outer half of cell. Expanse 1·5 inch. San Antonia, Tex.

A good way to get rare Lepidoptera.

By Geo. D. Hulst.

Butterflies and moths lay on the average from 100 to 700 eggs. As a rule there is from year to year comparatively no increase in the number of imagines. Of the vast number of eggs consequently, on the average only two arrive to the state of the perfect insect. The rest are all destroyed by disease, by accident, by parasites, or by the birds.

An egg of a butterfly or moth is not an easy thing to find, but when the chances in numbers at least are some 500 to 1 in its favor as compared with the imago, it may not be so hard after all. Certainly in the case of rare night flyers, a systematic and careful search for eggs, results in many more trophies than running the chance of getting the imagines otherwise. It becomes in their case a chance of many thousand to one in favor of obtaining the egg.

A method which has in our own case and that of a friend, been very successful for obtaining eggs of such rarities as Smerinthus Myops, Smerinthus Astylus, and Darapsa Versicolor has been as follows.

We go out at the proper season, which is when the females are plentiful and somewhat worn, or in the case of rarities at the season when we know they ought to emerge from the pupa, to make our search. In the search for Diurnals we look in some place where the species whose eggs are desired have been seen; and in the case of Sphingidæ, along fences or by the sides of roads or paths in the woods, and especially in the neighborhood of flowers apt to be visited by them, such as the Bouncing Bet (*Saponaria officinalis*) or the white Swamp, honey suckle (*Azalea viscosa*). Making a beginning anywhere, we turn up the branches of the food plant of the insect one by one, and scan closely the under side of each leaf. So we go on patiently from bush to bush, hour after hour. It is often slow work when looking for rarities. I have hunted for three days in divers places, without a sign of what I was looking for. All along however one is cheered with finding eggs and larvæ of more common species and sometimes of unlooked for rarities. So its like fishing; we take in our Porgies and Weakfish till our Sheepshead makes his appearance. When once however we strike an egg or very young larva we are better off than when we take a Sheepshead, for we know other eggs or larvæ are around. As a rule a butterfly or moth follows a path or fence side when laying; So upon finding the first egg or larva we more minutely examine each shrub for they are very apt to lay an egg on each prominent one as they go along. And it is not difficult to follow the path of the parent for quite a distance. And so the finding of one egg means almost surely the finding of more.

And whatever others may think, we are as well satisfied with a half hundred Myops eggs, or a score of those of Versicolor or Astylus, as the result of three days search as we would be had we by other methods filled boxes with the larvæ and imagines of what every body has and can get. And as for the trouble of raising a rarity, just let any one try to raise Astylus from the egg, and see if it isn't the most glorious trouble he has experienced in the entomological line!

At any rate, my friend and I have found it pays us in entomological results. If nothing be gained, but the patience and persistence needed, these are good wholesome virtues in ones home and in the battle of life. But as well our collections have been much enriched by large exchanges from persons anxious to get bred examples of rarities.

On Collecting Grounds.

Although a collector may find everywhere insects, on hill and dale, in woods and in fields, outdoors and in the house, in his room [yes even in his bed!] there are some localities visited by the winged world by preference. And I think it is worth while to take a record of such rich localities for the future generation, to save fruitless searches.

Long Island.

Ridgewood near Water Reservoir, wet woodland. *Lophoglossus strenuus,* May 23, to 25. *Elaphrus* May 19.

Richmond Hill. Hilly woodland. *Lebia* under stones April 29.

Jamacia Woods. Hilly wood. *Lebia, Cychrus elevatus* May 19.

Penny-bridge. Pasture. Farms- *Desmocerus* on elder. June 5.

Coney Island. Sea shore. Cic. hirticollis May etc. C. lepida July. dorsalis. July-Sept. Pasimachus sublaevis June to Sept. (under cow manure) Hister arcuatus (id) Geopinus (id) Dyschirius, Clivina etc. May to Sept., also lots of Carabidae, Lamellicornia and Lougicornia washed to the shore.

Rockaway. Same as Coney Island, but not so rich.

New Jersey.

Foot of Pallisades from Hoboken to Weehawken. Lots of Chlaenii, Platyni, Diplochila, Oodes, Elaphrus; Cychrus Lecontei etc. Feb.--May.

Fort Lee on the Hudson, rare Platyni, Chrysomelidae, May.

Marion. Sandy pine-woods, Cic. generosa, and modesta. June.

Greenville. Cic. generosa and modesta on sand near Fire-works factory. Cic. marginata near the swamps, Omophron and Elaphrus near a brook, Meloe etc. May and June.

Clifton. Bushes and low hill woodland. Nebria, Dicaelus purpuratus, Dichelonycha, Gaurodytes, Balaninus, Cryptocephalus, Saperda, Clytus, Purpuricenus Leptura, etc. May and June. In the brook innumerable Dineutes, Elmidae, etc. The best locality for years in this neighborhood.

Snake Hill. A large hill rising in the middle of extensive swampland. Panagæus crucigerus and fasciatus under stones. May & June; numbers of Chlaenii.

F. G. Schaupp.

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Vol. I. **A. A. Gould.** On the Cicindelidae of Massachusetts 1834, p. 41–55. 1 pl.

T. W. Harris. Upon the economy of some American species of Hispa 1835, pp. 141–151.

T. Say. Description of new N. A. Coleopterous Insects and observations on some already described. 1835, pp. 151–203.

Vol. II. **J. W. Randall.** Descriptions of new species of Coleopterous Insects inhabiting the State of Maine. 1838, pp. 1–33.

" Descriptions of new species of Coleopterous Insects inhabiting the State of Massachusetts. 1838, pp. 34–52.

T. W. Harris. Remarks upon the N.A. Insects belonging to the genus Cychrus, *Fab*, with descriptions of some newly detected species. 1839, pp. 189–204.

Vol. IV. **T. W. Harris.** Description of an African Beetle allied to Scarabaeus Polyphemus, with remarks upon some other insects of the same group. 1844, pp. 397–405. 1 pl.

Vol. V **J. L. Leconte, M. D.** A Monography of the N. A. Histeroides. 1845, p. 32–86. 6 plates.

" Description of some new and interesting insects inhabiting the U. S. 1845, pp. 203–209. 1 pl.

Vol. VI. **J. L. Leconte, M. D.** On the Pselaphidae of the U. S. 1850, pp. 64–110.

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Vol. VII. **T. W. Harris.** On Cicindela Hentzii. 1861, pp. 185–189.

S. H. Scudder. A chronological index of the Entomological writings of T.W. Harris. 1861, pp. 213–222.

Vol. IX. **B. D. Walsh.** On certain remarkable or exceptional larvae, Coleopterous, Lepidopterous and Dipterous with descriptions of several new Genera and species, and of several species injurious to vegetation, which have been already published in Agricultural journals. 1865, pp. 286–320.

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Vol. XIX. **E. P. Austin.** On the species of Sunius and Paederus found in the U. S. 1876, pp. 4–11.

Bibliotheca Coleopterologica.—8.

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" New Species of N. A. Coleoptera, 1865, pp. 1–86; 1866, pp. 87–177.

Vol. IX. **J. L. Leconte, M. D.** New Species of N. A. Coleoptera, II. 1873, pp. 169–240.

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Vol. IV. **T. Say,** Descriptions etc. continued. 1824, pp. 83–99.

Vol. V. **T. Say,** Description of new species of Hister and Helolepta inhabiting the U. S. 1825, pp. 32-47.

" Descriptions of new species of Coleopterous insects inhabiting the U.S. pp. 160–204; 237–284; 293–304.

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T. W. Harris, Descriptions of three species of the genus Cremastochilus. 1827, pp. 381–389.

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Vol. I. **J. L. Leconte, M. D.** Fragmenta Entomologica. 1847, pp. 71–93.

S. S. Haldemann, Descriptions of N. A. Coleoptera chiefly in the cabinet of J. L. Leconte, M. D. with reference to described spec. 1848. p. 95–110.

S. S. Haldemann, Cryptocephalinarum Bor. Am. diagnoses cum speciebus novis musei lecontiani. 1849, pp, 245–265.

J. L. Leconte, M. D. An attempt to classify the longicorn coleoptera of the part of America north of Mexico 1850, pp. 311–340.

Vol. II. **J. L. Leconte, M. D.** An attempt etc. continued 1850, pp. 5-38; 1852, pp. 99–112; 139–178.

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V.ol III. **J. L. Leconte, M. D.** Synopsis of Melolonthidae of the U. S. 1856, pp. 225-288.

Vol. IV. **J. L. Leconte,** Catalogue of Coleoptera of the regions adjacent to the boundary line between the U.S. and Mexico 1858, pp. 9–42 pl. 4.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. IV. BROOKLYN, JULY, 1881. No. 3.

Notes on Hemaris Marginalis, Grote.

By H. S. Jewett, M. D., Dayton, O.

Eggs deposited May 18th, 1881 on Lonicera sempervirens,* Ait. The eggs are smooth and nearly spherical; 3-64 inch in diameter and pale green in color. As they approach maturity the upper surface becomes slightly concave. The eggs are deposited singly, sometimes on the upper, but generally on the lower surface of the leaves.

The egg hatched May 21st. Larva ⅛ inch long tapering slightly, but regularly from head to the posterior extremity. Very pale green, except the caudal horn, which is glossy black and as long as the larva, and the mandibles which are light brown. Head subquadrate, faintly bilobed. Collar prominent. Each segment is divided into from 3 to 5 annulets by transverse sulci, which are very nearly as deep as those between the segments. The whole or the dorsum and sides of the larva is closely dotted with minute pointed papillæ, each giving rise to a minute, many branched, white hair.

Larvæ passed their first moult May 23rd. Length ¼ inch; cylindrical; pale green. Head subquadrate. Upper part of the head and the one third of the mandibles next to head yellowish green; the rest of the head somewhat darker green than the body. Collar prominent, with four large bright yellow tubercles on each side of dorsal line. True legs and posterior aspect of 13th segment bright shining black. Caudal horn glossy black except next to the body where it is bright yellow. All the rest of the body of a uniform pale green color.

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*Trumpet Honey suckle.

Larvæ passed their second moult on May 27th. Length ⅝ inch; nearly cylindrical; pale green, except the legs and the mandibles which are glossy black; the prolegs which are tipped with black and the caudal horn which is black except at its base where it is bright yellow. Collar exactly as after first moult. Stigmata are now for the first time noticable, being now black surrounded by a narrow grayish white border. Towards the end of the second moult the larvæ becomes whitish green on the dorsum; yellowish green on the sides and dark brown on the ventrum; the grayish white border surrounding the stigmata also changes to white. Otherwise unchanged except in size.

Larvæ moulted the third time on May 31st. Length from ⅞ to 1⅛ inch. The larvæ taper from the 4th segment to anterior extremity and from the 9th segment to the posterior extremity. Head subquadrate, yellowish green; mandibles black. Collar very prominent with four bright yellow round tubercles on each side of dorsal line. Legs black and prolegs tipped with black. Caudal horn glossy black except at its base where it is bright yellow. Stigmata oval, black surrounded by a narrow white border. Ventrum brown.

Larvæ passed their fourth moult on June 3rd. Length 1¼ to 1½ inch. Otherwise exactly as in last moult. The larvæ quit feeding June 6th when they had acquired a length of 1¾ to 2⅛ inches. Otherwise they underwent no change in appearance till last day of feeding when their color became darker, some becoming brown.

On June 6th they began to prepare for pupating by making (on the surface of the ground and in corners of the box) a rude cocoon of bits of dirt and leaves bound together by a thin web of dark brown silk. Within this slight protection the larvæ pupated on June 7th.

Pupæ are black from 1.1-16 to 1¼ inch in length; spindle shaped—being largest at about one third of their length from the anterior end of the pupa, and tapering nearly equally to each end. The anterior extremity is rounded while the caudal extremity is prolonged into a flattened triangular point. Wing cases well marked and cover the lateral and ventral surfaces of the anterior one half of the pupa. The abdominal segments (seven in number) are separated by very deep sulci and the pupa is very active in its movements if disturbed.

Pupæ made on June 7th disclosed imagines on June 23rd, On emergence the whole surface of the wings is covered with black scales which have a purplish reflection. The scales are set so close as to render the wing black, though not so close but that the outline of the transparent portion of the wing may be readily traced. The scales covering the transparent portion of the wing are so loosely attached that it is very difficult to save the insect in its beauty, as the vibratory movement of the wings, with which the imago accompanies any effort to move, is sufficient to detach them all except those along the nervules, and the smallest flight leaves the wings completely transparent. To preserve them with the transparent portion covered with scales, the imago must be taken as soon as the wings have fully developed. This is best done by covering the insect with a glass containing chloroform vapor so dense as to instantly overpower the imago and then leave the insect for several hours in a cyanide bottle (to prevent its returning to life and to give the wings more time to harden thus preventing bleeding when the insect is spread on the drying boards).

From the above it will be seen that the time required by the insect to complete its transformations is 35 days. Here the insect has four, and in long seasons five, broods, the last passing the winter in the pupa state. Still, the insect after its first appearance in the spring, may be found in all stages of development throughout the season owing to the facts, that the females spend several days in laying their eggs, and that a few larvæ of each brood are retarded in their development so as to be much behind the majority of their brethern, and finally some remain longer in pupa than the rest, sometimes even holding over from an early brood till the next year.

The larvæ are subject to much variation in the "ground color" of the body, though the special markings remain the same. Thus the "ground color" may pass from the usual "pea-green" through olive green to quite dark brown. Again the same larva does not always retain its original "ground color" throughout its transformations; i.e. a brown larva in one moult may be pale green the next one and *vice versa.*

Hemaris marginalis flies by day as well as during the twilight of morning and evening and has been taken by me in the middle of the day on wild and cultivated flowers. The larva has been found by me on the following plants, all of which are members of the "Honeysuckle family". Symphoricarpus racemosus, Michx. (Snowberry), Lonicera sempervirens, Ait. (Trumpet Honeysuckle) also on two other species of Lonicera, (the smooth leafed species); Diervilla trifida, Moench, (Bush Honeysuckle) and Trirsteum perfoliatum, L. (Fever-wort).

Description of and Notes upon various larvæ.

By Albert Koebele.

Daremma catalpae, *Bois.*

Mature larva: length about 3 inches, head orbicular, of medium size, jet black, with some yellow on the mouth pieces, and slightly retractile under the first segment of the body. Body cylindrical, first segment a little larger than the head, and from this the body regularly and gradually becomes larger to the last segment. There is a broad jet black dorsal band running from the head the whole length of the body past and inclosing the caudal horn and embracing the upper anal covering. This band extends on either side of the dorsal line about half way to the stigmata. It is edged on each side with a yellow line, and this by a black line. Below this there is a stigmatal yellow band partially crossed with black dashes more pronounced at the center of each segment. Below this at the summit of the legs is an uninterrupted black band extending the whole length of the body. Beneath the body is clear yellow. The stigmata are yellow with a black dot above and below. The caudal horn is jet black, long, linear, straight and pointed. The prolegs are black, the abdominal legs yellow. The larva feeds on Catalpa bignonioides. *Walt.*

There is a variety of the larva much more rare in which the black is much lessened; where in the place of the broad black band above there is an interrupted dorsal and two sub-dorsal black lines. The face and mouth parts in this are yellow.

The egg is light green. It hatches in 6 days. The growth of the larva occupies about 3 weeks. It pupates in the ground and is in the pupal state 16 or more days. There are consequently several broods each year. The larva after the first moult has a large dorsal and a small subdorsal black spot on each segment. These after the third moult become the continuous black band.

The eggs are laid in clusters, on the undersides of the leaves.

Sphinx Coniferarum, *Ab. & Sm.*

Mature larva; the larva of this insect was originally figured by Abbott & Smith and is by them represented as being checkered with light and dark gray squares. This form was found by me at Tallahassee, on Pinus palustris, but infested by parasites and another in the jaws of Pasimachus subsulcatus; but as feeding indiscriminately on all kinds of pine, the much more common form is light yellowish green in color with three white lines on each side—one just below the dorsal line—a second stigmatal—

and the third half way between these. The back stigmatal spaces and the under part of the body are strongly marked with red. The body is cylindrical, hardly varying in size from one end to the other. There is no caudal horn through all its history. The head is of medium size, light yellowish green, edged along the collar with a blue line. There is a black line running from each corner of the mouth to the summit of the head and there they meet one another. The head is rounded somewhat conical flattened in front. The length of the full grown larva is 2¾ to 3 inches.

The egg is very dark green and hatches in 8 days. The larva developes to full size in about 6 weeks. It goes into the ground to pupate and remains in the pupal state a month or more. There are at least 2 broods each year.

The pink color occurs in the larva only after the third moult.

The most remarkable part of the history of the insect is the extraordinary change which takes place in the shape of the head of the larva at different periods of its growth. Immediately after birth it is round. With the first moult it becomes angular and Smerinthus like. This is very much increased with the second and third moults so that in these it is fully 4 or 5 times its width running up to a sharp point at the summit When disturbed at this age the larva thrusts down the extremity of its head so it lies straight in a line with the body. Ordinarily it carries the point erect.

There is very much variation in the imagines. Front wings broader or narrower, many uniform ash gray in color. Many have the two black dashes near the middle of the fore wing. Some have only one. Some have a band of lighter grey across the wings, and some have dark lines and markings. Some apart from the color of the abdomen which remains uniform exactly resemble Sphinx pinastri of Europe.

Datana Floridana, *Graef.*

The larva is black with 11 parallel yellowish lines running the full length of the body. There is one immediately between the legs under the body—one on the line of and interrupted by the legs—the rest above and equidistant from each other leaving the back with a somewhat broader black space. The head, the summit of the body segment, the anal covering and the summits of all the legs are deep mahogany red in color. The feet are all black; those on the last segment are partially aborted. It has the habit which seem to be common to the genus of raising and throwing back the head and tail over the body when disturbed.

Philampela Vitis, *Linn.*

I give this as an instance of rapid developement. The eggs hatched in 6 days. The larva went through its development in 17 days, and became an imago 3 weeks later, making only about 6 weeks for the complete life, a development possibly paralled by no other of the Sphinginæ.

Catocala ilia, *Guen.*

The larva is very large measuring 3½ inches in length. The head is flattened as usual, eyes prominent with a very slight protuberance on on the upper portion. There are black striations back of the summit and running half way down the cheeks. Body of a dirty brown color, much striated with blackish, and having indistinctly outlined wavy subdorsal and stigmatal black bands. Towards the head the brown of ground color has a decidedly reddish cast. There is a sub-dorsal line of slight protuberances one on each segment from the third segment back. There is also a dark lunule with the horns forward on the 11th segment. Underneath it is marked very strongly with pink especially on the anterior portion, and between the legs there is a very heavy black dash on each segment from the 4th to the 10th inclusive lessening somewhat on the last three.

The larva feeds on the various kinds of oak.

Catocala Carissima, *Hulst.*

Head gray brown. Protuberance on summits of eyes prominent. Body, ground color gray; very heavily marked and striated with rust-brown which towards the head almost completely covers the body. There is a brown lunule on the 11th segment with horns forward. Underneath clear red brown between 3rd and 6th segment. The 6th and 7th segment between and anterior the legs have each a large nearly round spot. The larva is considerably smaller than that of *ilia* when full grown, though the imago is one of the largest, if not the largest of all Catocalæ. It feeds on Willow.

Catocala grynea, *Cram.*

Length 2 to 2¼ inches. General color silvery gray with a reddish cast. Eyes marked at summit with a lunule of yellowish white, and this lined behind with rust-red extending nearly to the mouth. Body more reddish towards the head. There is a very prominent protuberance of a rust-red color at summit of 12th segment. Red very pronounced at the summit of the legs on the 9th and 10th segment. It feeds on crab apple.

NEW PUBLICATIONS.

J. L. Leconte, M. D.

Trans. Am. Ent. Soc. IX. pp. 15–72.

Synopsis of the Lampyridæ of the U. S.—Describes as new Rhyncheros (n.g.) Calopteron retiferum, *Ariz.* and tricarinatum, *Ariz.* Caenia amplicornis, *Col.* Lopheros (n. g.), Calochromus fervens, *Col.* Pyropyga indicta, *Mich. Cal.* Tenaspis (n. g.), Photinus dimissus, *Tex.* benignus, *Tex.* Pleotomus Davisii, *Ky*, Phengodes frontalis, *Tex.* laticollis, *N.C.* Sallei, *La.* Zaphiris (n. g.), ruficollis, *Cal.* piciventris, *Cal.* Cenophengus (n. g.), debilis, *Cal.*

Chauliognathus fasciatus, *Utah.* Podabrus nothoides, *Mass. L. Sup.* quadratus, *Tex.* fissus, *Fla.* binotatus, *Cal.* limbellus, *N.H.* xanthoderus, *Cal.* lutosus, *Vanc. Col. Nev.* extremus, *H. B. Terr.* Bolteri, *Cal.* melittus, *Cal, Nev.* Telephorus pusio, *Ills.* Walshii, *Ill.* nigritulus, *H B. Terr. Anticosti*, nanulus, *Mich.* ruficollis, *Col.* impar, *Tex.* alticola, *Col. Wy.* ochropus, *Cal.* ingenuns, *Nev.* Polemius repandus, *Pa. Ga. Tex.* —Silis munita, *Id. Col.* spathulata, *Ill.* perforata, *Tex.*—Ditemnus fosilger, *Tex. Ariz.* —Malthinus atripennis, *Tex.*—Malthodes captiosus, *Va.* rectus, *Va. Ga.* curvatus, *Ill.* furcifer, *Col.* arcifer, *Md.* analis, *M.St.* congruus, *Va.* quadricollis, *L. Sup.*

Geo. H. Horn, M. D.

Trans. Am. Soc. IX. pp. 73-90. with two plates.

Revision of the species of Polyphylla of U. S.—New P. gracilis, *Fla.* (Mocronoxia suppressed).

Notes on Elateridæ, Crebrionidæ, Rhiperidae and Dascyllidae.—New. Crebrio estriatus, *Tex.* Scaptolenus ocreatus, *Tex.*

F. G. Schaupp.

Biological Notes on some Coleoptera.

By F. G. Schaupp.

Alaus oculatus, *Lin.* Larvæ and pupæ were found in basswood July 16. One larva pupated Aug. 4., imago developed Sept. 1.

Ceruchus piceus. *Web.* Larvæ, pupæ and imagines in beech Aug. 15.

Clinidium conjungens, *Germ.* Imagines in beech July 7, in bass July 17., in hemlock July 25.

Dendroides canadensis. Pupæ in birch July 19., in beech July 23.

Dorcus parallelus, *Say.* Larvæ, pupæ and imagines in bass July 12 and 19; pupæ and imagines Aug. 26, in sugar maple.

Orthosoma brunneum, *Forst.* Larvæ, pupæ and imagines July 18, 19, 20, 25; one larva pupated July 19, imago developed July 30. Larvæ were of all sizes from 8mm to 70 mm.

Osmoderma scabra, *Beauv.* Larva in beech July 15; in maple Aug. 19.

Trichius affinis pupæ in oak July 7.

Trogosita corticalis, *Mels.* Larvæ in birch July 8, in beech Aug. 14, in sugar-maple July 19.

Nyctobates pennsylvanicus, *Dej.* Pupæ in beech July 15; in hemlock July 18; in birch July 21.

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Proceedings of the Academy of Natural Sciences of Philadelphia.

VOL. I. (1843).

Haldeman, S. S. Catalogue of Carabideous Coleoptera of South-Eastern Pennsylvania, pp. 295–298.
" Description of N. A. Coleoptera presumed to be undescribed p. 298-304.
" Description of Pasimachus substriatus, p. 313.

VOL. II. (1844–1845).

Melsheimer, F. E. Description of new species of Coleoptera of U. S. pp. 26–43, 98–118, 134–160, 213–223, 302–318.

Ziegler, D. Description of new N. A. Coleoptera pp. 43-47, 266–272.
Leconte, J. L., M. D. Descriptions of new species of N. A. Coleoptera, pp. 48–53.
Haldeman, S. S. Description of Insects presumed to be undescribed, pp. 53–55.

VOL. III. (1846–1847).

Melsheimer, F. E. Description of new species of Coleoptera of U. S. pp 53–66, 158–181.
Haldeman, S. S. On several new genera and spec. of Insects, pp. 124–128.
" Description of several new spec. and one new genus of Insects, p. 149-151.
" A note, (corrections on previous papers), p. 348.

VOL. IV. (1849).

Haldeman, S. S. Cryptocephalinarum Boreali-Americæ diagnoses cum spec. nov. musei lecontiani, pp. 170–171.

VOL. V. (1850–1851).

Haldeman, S. S. Report on the Progress of Entomology in the U. S. during the year 1849, pp. 5–7.
Leconte, J. L., M. D. Synopsis of the species of *Donacia*, Fab. inhabiting the U. S. pp. 310–316.
" Zoological Notes (about fauna of Panama), pp. 316–320.
" Synopsis of the *Lampyrides* of temperate North America, pp. 331-347.

VOL. VI. (1852–1853).

Leconte, J. L., M. D. Hints towards a natural classification of the family *Histrini* of Coleopterous Insects, pp. 36–41.
" Synopsis of the *Parnidæ* of U. S. pp. 41–45.
" Synopsis of the *Eucnemides* of temperate N. A. pp. 45–49.
" Remarks on some Coleopt. Insects collected by S. W. Woodhouse, M. D., in Missouri Territory and N. Mexico, pp. 65–68.
" Synopsis of the *Anthicites* of the U. S. pp. 91-104.
" Remarks upon the *Coccinellidæ* of the U. S, pp. 129–145.
" Synopsis of the *Scydmaenidæ* of the U. S. pp. 149–157.
" Catalogue of the *Melyrides* of the U.S. with descr. of new spec. pp. 163-171.
" Description of 20 new spec. of Coleoptera inhabiting the U.S. pp. 226-235.
" Synopsis of the *Silphales* of America, North of Mexico. pp. 274–287.
" Synopsis of the spec. of the Histeroid genus *Abræus*, Leach, inhabiting the U.S. with description of two nearly allied genera pp. 287–292.
" Synopsis of the *Meloides* of the U.S. pp. 328–350.
" Synopsis of the *Atopidæ*, *Rhipiceridæ* and *Cyphonidæ* of U.S. pp. 350–357.
" Synopsis of the *Endomychidæ* of the U. S. pp. 357–360.
Haldeman, S. S. Description of some new species of Insects with observations on described species. pp. 361–365.
Leconte, J. L., M. D. Description of some new Coleoptera from Texas, chiefly collected by the Mex. Boundary Commission pp. 439–448.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. IV. BROOKLYN, AUGUST, 1881. No. 4.

Description of a new species of Aphodius.

By John L. Leconte, M. D.

(Reprint from E. V. Harolds Coleopterlogische Hefte X, 193, Muenchen 1872.)

A. opacus: *Oblongus, ater, opacus, sutura nitida; capite hemihexagono, modice convexo, antice late subemarginato, angulis obtusis rotundatis, confertim punctulato; prothorace sat dense subtilius punctato, apice pilis brevibus fulvis fimbriato, lateribus fere parallelis, subsinuatis, basi subsubsinuatim rotundato et tenuiter marginato, angulis anticis et posticis valde rotundatis: elytris prothorace haud latioribus, striis angustis puuctatis, interstitiis planissimis, obsolete punctulatis.—Long. 6 mm.*

Vancouver Island; one specimen, Mr. Matthews. The head is not tuberculate, the mesosternum is not carinate; the transverse ridges of the hind tibiæ are very distinct and the apical fringe is composed of very short spines, which are nearly but not quite equal. The teeth of the front tibiæ are well marked and prominent. The prothorax is nearly, but not quite twice as wide as its length. The under surface is black, moderately shining, rather coarsely punctered; tarsi and palpi brown. Antennæ black, with grayish pubescence.

Note.—We reprint the foregoing description from a work hardly accessible to most of the coleopterists of this country and we intend hereafter to publish from time to time the descriptions of single species contained in foreign periodicals not within reach of most of our collectors.

Editor.

Descriptions of some new species of Geometridae.

By Geo. D. Hulst.

Cidaria nocticolata, *sp. nov.*

Expands 1¼ inches. Head; front ash gray, above lighter.

Thorax gray, tegulæ lined posteriorly with black. Abdomen brownish gray above, light gray below; legs ashen, the fore pair darker on tibiæ and tarsi and on the latter striped round about with whitish; hind legs russetty towards ends.

Fore wings, rather broad,—angulated at apex, exterior margin much rounded; color light gray, a broad indistinctly black band about ¼ from base becoming obsolete posteriorly. A narrow line, dark, very faint, just within the discal spot which is black prominent. Another band beyond faint and hardly traceable and yet beyond a broad marginal band most distinct at apex and ⅓ from apex along outer margin. The inner edge of this band is deeply scolloped and the band is divided with a scolloped line of light ashen. Margin with narrow line of black.

Hind wings without lines—light towards base, darker faintly russet towards outer edge. Discal spot distinct.

Beneath much lighter than above. Discal spots apparent; third line on fore wings more distinct, the others less so. An indistinct median line on hind wings. Fringes light.

3 specimens, Colorado.

Cidaria semiatrata, *sp. nov.*

Expands 1¼ inches. Antennæ, head, thorax and abdomen uniform ash gray.

Fore wings, much curved at apex which is sharply angulated, rounded on outer margin and at posterior angle; base black followed by a dark gray band edged with white lines indistinct except along costa; a triangular patch of black along costa formed by dark gray band beyond including discal spot, joining the first dark gray band at posterior part of wing; beyond another black band suffusing with preceding on inner side, distinct irregular swelling out at middle on outer side; then a light gray submarginal band containing row of black spots more distinct towards costa. Discal spot black distinct.

Hind wing light at base and anterior edge—ashen somewhat broken with white along outer and inner edges.

4 specimens, Colorado.

Cidaria opacaria, *sp. nov.*

Expands 1½ inches. Antennæ smoky black, palpi dirty gray. Thorax dark gray, tegulæ edged with black. Abdomen light gray.

Fore wings—light ashen at base, with black band ¼ distance towards apex; this band is straight and distinct on inner side and fades rapidly into light gray on outer, this is followed by a distinct irregular scolloped black line the points turned outward and the one nearest middle of wing—protruded as a black dash across next space which is a broad not uniform dark gray band darkest within and towards the costa; then a waved line of black, edged outwardly with white; then a mixed dark and light submarginal band; a black spot at end of each vein, marginal line black, fringe gray.

Hind wings light gray with two faint indications of bands at center and beyond; marginal line black.

Beneath as above much subdued and both wings somewhat peppered with almost black atoms.

4 specimen Colorada.

Cidaria mulleolata, *sp. nov.*

Expands 1½ to 1¾ inches. Antennæ gray, palpi dark brown, clypeus buff, thorax russet-gray, abdomen gray, with russet shade at middle.

Fore wings with broad reddish brown band occupying ⅓ length of wing; this is crossed by two faint black lines, and is edged outwardly with an irregular black line with points of scollops running outward at veins, joining the points of a scolloped black line beyond, making on the posterior part of the wings, oval inclosed spaces. The space between these lines is lighter with little or no reddish, save on the outer part; along the costa it becomes black; beyond this black a white edging and beyond this and along the outer margin a reddish band containing indistinct and broken lines; a blackish spot near posterior angle. Discal spot black. Hind wings almost uniform silky gray, with dark marginal line.

Beneath on a reddish gray ground very faint indications of markings above, except costal black mark which is distinct. Hind wings with two dark irregular parallel lines across middle, discal spot distinct.

2 specimens, Colorado.

Scotosia multivagata, *sp. nov.*

Expands 1½ inches. Antennæ dark, palpi russet, clypeus white; thorax and abdomen light gray; legs light buff, darker and circled with white near ends.

Fore wings crossed with many waved lines and bands; light at base, followed by much waved parallel lines of dark ashen and light gray four of each, the lighter spaces slightly the wider. Then beginning ⅓ distance to apex a broad dark ashen band narrowing much posteriorly with indistinct lighter bands within; then two waved bands, first one light gray, second one dark waved, parallel with margin; then a light line, then a marginal brown ashen band. Fringes alternating light and and dark gray. A faint russet yellow tinge sub-basally and in sub-marginal bands beyond discal spot.

Hind wings light at base with three ashen bands, the inner faint, the outer distinct and marginal.

Beneath almost uniform light ashen.

2 specimens, Colorado.

Habits of the larva of Rhodophora (Alaria) florida, *Guen.*

Many have long known that the larva of *Rhodophora florida*, feeds on the evening primrose, but few have succeeded in finding it, common as it is, and it has escaped even experienced collectors searching for it. They have all construed the expression "feeds on the evening primrose", to mean the leaves of that plant, while as a matter of fact our larva lives on, and partially *in* the buds. The *modus operandi* is as follows: A small hole, of a diameter barely equalling that of the larva is cut near the tip of the bud, and the larva then feeds downward, exposing itself less as it gets to the lower part of the bud. When one is emptied another is attacked, and so on until the larva is full fed. If it happens that the buds are all gone before that time, it still avoids the leaves, but attacks the seed capsules, which much resemble the buds, both iu size and form, and leaves the empty capsule with a small hole near the tip, to explain matters to the initiated. The color of the larva is green like the bud it feeds on and with the same velvety appearance: the part outside of the bud or seed capsule is always extended longitudinally along it, so that it is not readily preceived. They are easily raised, and although I have been signally unsuccessful myself it was not because of any difficulty with the larvæ, but because I neglected the pupæ. The *imagines* are found early in the morning in the flowers of the preceeding evening.

J. B. Smith.

Synoptic table of the tribe Chlaeniini.

By Geo. H. Horn, M. D.

Eighth stria of the elytra with its ocellate punctures distant from the margin; the nith stria very distinct. Eyes regular in outline, not truncate behind.
  Mentum with distinct lateral lobes.
    Toothed in the bottom of the emargination.................... **Chlaenius.**
    Not toothed... **Anomoglossus.**
  Mentum truncate in front....................................... **Brachylobus.**
Eighth stria very close to its margin, the ninth indistinct. Eyes truncate behind.
  All the tarsi pubescent beneath.
    Anterior tarsi ♂ with four joints not widely dilated; clypeus with a setigerous puncture each side; labrum 6–setose...................... **Lachnocrepis.**
  Posterior tarsi not pubescent beneath.
    Anterior tarsi ♂ with four joints dilated, the first three spongy beneath; clypeus without setigrous punctures; labrum with six setæ, the four central small and close, the outer large and erect.................... **Anatrichis.**
    Anterior tarsi ♂ with three joints dilated and spongy.
      Second joint of labial palpi without setæ in front...... ....,.... **Oodes.**
      Second joint of labial palpi bisetose in front.................. **Evolenes.**

Brachylobus, Chaud. Mon. p, 287.

lithophilus, Say, (Chlænius) Trans. Am. Phil. Soc. II, p. 62.=*viridanus*, Dej. Spec. V, 660;=*smaragdiger*, Motch. Bull. Mosc. 1864. II. 338.—9–9.5 mm. N. Y. to Dak. to Texas.

Chaudoir has separated this species from the Chlaenius on account of the mentum, altogether exceptional, being transversely trapezoidal, much narrower anteriorly, scarcely at all emarginate in front, the sides very obliquely truncate; without mentum tooth. See Horn. Trans. Am. Ent. Soc. V, 273.

Anomoglossus, Chaud.

Dr. Horn, l.c. classifies them as follows.

Thorax broader at base than apex, sides not at all sinuate posteriorly, hind angles obtuse, labrum moderately emarginate, last joint of maxillary palpi glabrous.. **emarginatus.**
Thorax with base and apex equal, sides very feebly sinuate posteriorly, hind angles obtuse, labrum feebly emarginate, palpi slightly pubescent..... **amœnus.**
Thorax narrower at base, sides very decidedly sinuate, hind angles acute, labrum deeply emarginate, palpi slightly pubescent.................... **pusillus.**

A. emarginatus, Say. Trans. Am. Phil. II, p. 63., Dej. Spec. II, 366.—11–13. mm. Can. N. Y. to Ky.

A. amoenus, Dej. Spec. V, 648., Lec. New Spec. 1863, p. 12.—9.5 mm. Rare in Ga.

A. pusillus, Say. Trans. Am. Phil. II, 63.=*elegantulus*, Dej. Spec. II, 367.,=*Feisthameli*, Laf. Fr. 1851. p. 248.—8–8.5 mm. Mass. N. Y. to Ills.

Lachnocrepis, Lec.

parallela, Say. Trans, Am. Phil. Soc. IV, 420., Lec. ibid. X, 391.—10.5 mm N.Y. Pa Ga. Mo. rare.

Shining black, elytra finely seven-striate, striæ distinctly punctulate.

Anatrichis, Lec.

minuta, Dej. Spec. V, 677., Lec. Trans. Am. Phil. Soc. X, 391. 5–6 mm. La. Tex. Mo.
Black shining, oval; elytra deeply striate, striæ densely punctulate.

Oodes, Bon.

Our species have been divided by Chaudoir (Bull. Mosc. 1857. III, pp. 20-21,) into three genera. See Dr. Horn. Trans. Am. Ent. Soc. III, p. 105.

Ligula free at apex.

First joint of anterior tarsus ♂ entirely spongy beneath; elytra with seven striæ equally distinct.. (OODES, Chaud.)

Thorax gradually broader from base to apex...................... **amaroides.**

Thorax slightly narrowed at base.

Elytral striæ distinctly and closely punctured.................. **americanus.**

Elytral striæ finely and distantly punctured...................... **fluvialis.**

First joint of anterior tarsus ♂ spongy only at apex; seventh elytral striæ either entirely obliterated or replaced by fine distant punctures. (STENOUS, Chaud.)

Thorax gradually broader from base to apex, sides not sinuate behind.

Elytral striæ faint and with punctures in their entire length; tibiæ pale testaceous.. **cupræus.**

Elytral striæ deeper, impunctured; legs entirely piceous............ **Lecontei.**

Thorax with sides distinctly sinuate behind; elytral striæ distinct, punctured only at base.. **elegans.**

Ligula and paraglossæ more or less connate; first joint of anterior tarsus ♂ spongy only at apex, seventh elytral striæ either obliterated or replaced by distant fine punctures.................................. (CROSSOCREPIS, Chaud.)

Striæ impunctured, seventh wanting..................... **quatuordecimstriatus.**

Striæ punctured, seventh replaced by a row of indistinct punctures....... **texanus.**

O. amaroides, Dej. Spec. V, 674.—7.5-9 mm. N. Y. Pa to Tex. to Kans.

O. americanus, Dej. Spec, II, 377.—12.5 mm. N. Y. to Ga. Very common in Jersey City near the big swamp.

O. fluvialis, Lec. New Spec. p. 13.—12.5 mm. Ills.=*cupreus*, Chaud. Bull. Mosc. 1843. IV, 761.=*leucodactylus*, Ferte. Ann. Fr. 1851. 273.—10 mm. N. Y., Pa. to La. and Mo.

O. Lecontei, Chaud. Bull. Mosc. 1857. III, 41.=*quatuordecimstriatus*, Lec. Ann. Lyc. IV, 331.—10 mm. La.

O. elegans, Lec. Ann. Lyc. V, 180.—10-10.5 mm., Ariz.

O. quatuordecimstriatus. Chaud. Bull. Mosc. 1843. II, 759.=*picipes*, Lec. Proc. Acad. II, 52. Ann. Lyc. VI, 331.=*stenocephala*, Laporte, Ann. Fr. 1854, 271.—11.5 m. La. Tex.

O. texanus, Lec. New Spec. 13.—11.5 mm Tex.

Evolenes, Lec.

Closely allied to Oodes, but differs in the shorter and stouter antennæ.

Black, thorax piceo-rufous, elytra faintly striate, striæ with fine punctures, the sixth and seventh less distinct.. **impressa.**

Piceo rufous, elytra deeply striate, the striæ crenate l punctured, the seventh as distinct as the others.. **exarata.**

E. impressa, Lec. Trans. Am. Phil. Soc. 1853. p. 392.—3 mm. La.

E. exarata, Dej. Spec. V, 678. Lec. Trans. Am. Phil. Soc. 1853, 392.—6 mm. Ga. Ala. Has the appearance of Amara musculis, Say. at first sight.

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VOL. VII. (1854-1855).

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" Synopsis of the *Oedemeridæ* of the U. S. pp. 20-22.

" Notes on the genus Amblychila, Say. pp. 32-34.

" Synopsis of the species of *Platynus* and allied genera inhabiting the U.S. pp. 35-59.

" Synopsis of the *Cucujides* of the U.S. pp. 73-79.

" Notice of some Coleopterous Insects from the collection of the Mexican Boundary Commission. pp. 79-85.

" Synopsis of the *Dermestidæ* of the U. S. pp. 106-113.

" Synopsis of the *Byrrhidæ* of the U.S. pp. 113-117.

" Synopsis of the *Erotylidæ* of the U.S. pp. 158-163.

" Description of the species of *Trox* and Omorgus inhabiting the U. S. pp. 211-216.

" Some corrections in the nomenclature of Coleoptera found in the U. S. pp. 216-220.

" Descriptions of new Coleoptera collected by Thos. H. Webb, M.D., pp. 220-225.

" Synopsis of the *Pyrochroides* of the U. S. pp. 270-277.

" Remarks on some misrepresentations contained in the "Catalogue des larves des Coleopteres" by M. M. Chapuis and Candeze. pp. 288-289.

" Analytical table of the species of *Hydroporus* found in the U.S. p. 290-299

" Synopsis of the *Lathridiides* of the U.S. and northern contiguous Territories. pp. 299-305.

" Notes on the *Amaræ* of the U. S. pp. 346-356.

" Synopsis of the *Hydrophilidæ* of the U. S. pp. 356-375.

Uhler, P. R. Descriptions of a few Coleoptera supposed to be new pp. 415-418.

VOL. VIII. (1856).

Leconte, J. L., M. D. Synopsis of the *Mycetophagidæ* of the U. S. pp, 12-15.

" Synopsis of the *Phalacridæ* of the U.S. pp. 15-17.

" Notes on the genus Lithodus *Schoenh.* pp. 18-19.

" Notice of three genera of *Scarabæidæ* found in the U. S. pp. 19-25.

" Analytical table of the species of *Chlaenius* fonnd in the U.S. pp. 25-29.

Rogers, W. Fred. Synopsis of the species of *Chrysomela* and allied genera inhabiting the U. S. pp. 29-38.

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" Index to the *Buprestidae* of the U. S. described in the works of Laporte and Gory with notes, pp. 6-11.

" Synopsis of the spec. of *Clivina* and allied genera inhabiting U.S. 75-83.

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" Note on the species of *Eleodes* found within the U.S. pp. 180–188

1859. (VOL. XI.)

Leconte, J. L., M. D. Catalogue of the Coleoptera of Fort Tejon Cal. pp. 69–90.

" Addition to the Coleopterous Fauna of Northern Cal. and Or. pp. 281–292.

" Descriptions of new spec. of the Coleopterous family Histeridae p. 310–317.

1860. (VOL. XII.)

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" Synopsis of the *Scaphidiidae* of the U. S. pp. 321–324.

Horn, Geo. H., M. D. Descriptions of new North American Coleoptera in the cabinet of the Entomological Society of Philadelphia pp. 569–571.

1861. (VOL. XIII.)

Leconte, J. L., M. D. Notes on the Coleopterous Fauna of Lower Cal. pp. 335–338.

" New spec. of Coleoptera inhabiting the Pacific district of U.S. p. 338–359.

1862. (VOL. XIV).

Leconte, J. L., M. D. Note on the Classification of *Cerambycidae* with description of new species. pp. 38–43.

" Synopsis of the *Mordellidæ* of the U.S. pp. 43–51.

" Notes on the species of *Calosoma* inhabiting the U. S. pp. 52–53.

Horn, Geo. H., M. D. Monograph of the species of *Trogosita* inhabiting the U.S. pp. 82–88.

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" Notes on the species of *Brachinus* inhabiting the U.S. pp. 523–525.

1864. (VOL. XVI.)

Helmuth, Chas. A., M. D. New species of *Mordellistena* collected in Ills. p. 105.

1865. (VOL. XVII).

Helmuth, Chas. A., M. D. New species of *Mordellidæ* collected in Ills. p. 96.

Leconte, J. L., M. D. Note on the species of *Myodites* Latr. inhabiting the U. S. pp. 96–98.

" Note on species of *Harpalus* inhabiting America north of Mexico p. 98–104.

" On the species of *Galeruca* and allied genera inhabiting N. A. p. 204–222.

" Prodromus of a Monography of the species of the Tribe *Anobiini* of the Family Ptinidæ inhabiting North America. pp. 222–244.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. IV. BROOKLYN, SEPT. & OCT., 1881. Nos. 5. & 6.

Descriptions of some new species of Geometridae, II.

By Geo. D. Hulst.

Endropia helveolaria, *sp. nov.*

Expands 17 lines. Head, thorax and abdomen ochreous.

Basal and central portion of all wings of same color; this is crossed on both fore and hind wings with two wavy parallel lines of rust yellow, hardly discernible on hind wings. Marginal band deep ochreous, broad, distinct on fore wings, bounded within by a very slight wavy line; indistinct on hind wings especially towards inner side. The inner edge of this line begins on the costa 1·6 the distance from the apex, and gradually, but not much, extends away from exterior margin.

Beneath, fore wings rusty in front, pale behind, with line at edge of band apparent; hind wings rusty in front, and outwardly; line of band apparent; discal spot distinct on hind wings.

1 specimen, also one in collection of Mr. Fred. Tepper, Colorado.

Macaria grassata, *sp. nov.*

Expands 16 lines. Antennæ yellowish brown. Head ochreous, collar much darker, thorax bluish gray, abdomen very light ocher.

Fore wings quite falcate in shape like M. bisignata. Hind wings much angulated as in M. bisignata. Basal and central portion of all wings dull yellowish white thickly sprinkled with brown spots; very faint indications of two lines across each wing. A broad marginal band of brown with blue tint. Along costa 6 black spots, the last two almost apical, and all small except the 4th which is near the apex and is a broad, clearly defined dash extending ¼ across the wing. Discal spot not on fore wing and hardly apparent on hind wing. Margin below apex in falcate space marked with black fringe concolorous with margin. Beneath, ochreous thickly sprinkled with brown, and with one prominent dark brown extra discal band; margin dark brown on fore wings, fringes as above. All discal spots prominent dark brown.

1 specimen, Colorado.

Very near M. bisignata, Walk, of which it may be a variety. But the color of thorax, wings and markings differs, and it lacks the transverse lines above, and one of the heavy lines below.

Phasiane hebetata, *sp. nov.*

Expands 17 lines. Antennæ, head, thorax, abdomen and all wings almost uniform, dull cinereous, formed on the wings by a light ground heavily and minutely striated with dark ashen; fore wings slightly darker towards outer margin inclosing a broad line lighter than ground color. Hind wings varied, so as to form two indistinct darker bands. Discal spots dark with lighter centre on fore wings, almost obsolete on hind wings.

Beneath light gray, heavily sprinkled with dark ashen striations. All discal spots distinct. Russety along costæ.

2 specimens, Colorado.

Near P. subminiata Pack, being somewhat differently marked above and lacking vermilion below.

Macaria vellivolata, *sp. nov.*

Antennæ long, head gray, thorax and abdomen stout, gray with faint reddish edging to tegulæ.

Ground color of wing clear gray. On fore wings first a much curved reddish band with black spot above on costa, then at discal space a black line curved outwardly; this is followed by a gray space, broad at costa, narrowing to a line at inner margin, then a broad dark gray band, reddish and partially edged with black interiorly, extending to outer margin; midway this is broken by a strongly serrated whitish line. The hind wings are marked as the fore wings, save they lack the first reddish band. A row of black points along all outer margin; fringes ashen, short. Discal spot of fore wings lost in black line; on hind wings oval inclosing light gray oval space. Beneath dark cinereous, darkest towards outer margins; discal spots, distinct black spots.

1 specimen ♀, Florida.

Pupae of Dorcus parallelus, *Say.*

About the middle of August, I found in the roots of Maple and Bass trees, several pupæ and newly developed imagines of Dorcus parallelus, *Say.*

The pupæ present a very remarkable and interesting sexual difference, those of the ♂ having besides the naturally much larger, plump cover of the mandibles, between the anal fork a spiral prolongation completely filling with its spirals the space between the anal fork.

The prolongation begins at the anus, goes straight to the end of the anal fork, and then turns backwards forming three spirals the terminal part of which, the end of the third spiral, being at the left side of the last abdominal segment.

In newly developed imagines the cover of this prolongation contains a filiform thin spiral about 30 mm. long, rather longer than the whole insect. After a few hours it is retracted into the abdomen, I do not know the use of this part.

I have in Alcohol two larvæ of ♂, two of ♀, one imago newly developed, and dissected two old species. F. G. Schaupp.

NEW PUBLICATIONS.

Geo. H. Horn, M. D.

Trans. Am. Ent. Soc. IX. pp. 91–196. with 8 plates.

On the genera of Carabidæ with special reference to the Fauna of Boreal America.—An entirely new arrangement of the Carabidæ based on an autopsy, the author having dissected and with his well-known accuracy and skill, carefully examined all the characters on which the genera were based. In many instances the old arrangement is greatly modified and altered. The first plate gives the underside of each of the Adephagous families, the 2nd some of the rarer and more interesting species as Miscodera, Onota, Eucærus, Evolenes etc., and the other six anatomical details, mostly mouthparts (about 300 figures!) The work may create an ill feeling among some authors but what Dr. Horn did, was done from the love of truth and science.

Note on larva and pupa of Cryptorhynchus parochus, *Say.*

Several larvæ and pupæ of Cryptorhynchus parochus, Say, were found last season, Aug. 10th under the bark of a butternut-tree. The greater part of pupæ were looking through the bark by half their length and moving lively in the sunlight. Duration of pupa state 14 to 16 days.

F. G. Schaupp.

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1866. (VOL. XVIII).

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  " List of the Coleoptera collected in the mountains of Lycoming County, Pa. pp. 346–348.
  " List of Coleoptera collected near Fort Whipple, Arizona, by Dr. Elliott Coues, U.S.A. in 1864–1865, pp. 348–349.
  " Revision of the *Dasytini* of the U. S. pp. 349–361.
  " Additions to the Coleopterous Fauna of the U. S. No. 1. pp. 361–394.

Horn, Geo. H., M. D. Descriptions of some new *Cicindelidæ* from the Pacific Coast of the U. S. pp. 394–397.
  " Description of some new genera and allied species of Central American Coleoptera pp. 397–401.

1868. (VOL. XX.)

Leconte, J. L., M. D. Analytical table of the species of *Baridius* inhabiting the U. S. pp. 361–365.
  " The *Gyrinidæ* of America, north of Mexico. pp. 365–373.
  " Notes on the species of *Agonoderus*, *Bradycellus* and *Stenolophus*, inhabiting America north of Mexico. pp. 373–382.

1873. (VOL. XXV).

Crotch, G. R. Materials for the Study of the *Phytophaga* of the U. S. pp. 19–83.
  " Notes on the species of *Buprestidæ* found in the U. S. pp. 84–96.

Leconte, J. L., M. D. Remarks upon the death of F. E. Melsheimer. p. 257.
  " The *Pterostichi* of the U. S. pp. 302–320.
  " Synonymical Remarks upon N. A. Coleoptera. pp. 321–336.

1876. (VOL. XXVIII).

Leconte, J. L., M. D. Destructive Coleoptera. p. 195.
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F. G. S.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. IV. BROOKLYN, NOV. & DEC., 1881. Nos. 7. & 8.

Description of the larva of Necrophorus tomentosus, *Web.*

By F. G. Schaupp.

Length of fullgrown larva; 22 mm. breadth 5 mm.

Form elongate, sub-cylindrical, tapering towards each end.

Color. Head red-brown; tergal scutes and legs brown; abdomen white.

Head triangular; broader than long; anteriorly narrower; hind angles broadly rounded; posterior margin sinuate, anterior arcuate; convex above, somewhat flat beneath. *Eyes* scarcely distinct.

Antennæ four-jointed, rising at the sides of the head a little before the middle; longer than the mandibles; first joint very short, conical, truncate at tip; second elongate, sub-cylindrical, three times longer than the first; third as long as the second, clavate with a bristle at the inner side of tip; the terminal joint slender, nearly as long as the second with two bristles.

Mandibles short and stout, multidentate, slightly arcuate, constricted at the middle.

Maxillæ very stout; first joint one half shorter than the second, the second is truncate at tip, covered by a hairy plate, at the inner side there is a connate lobe? and at the outer side near the middle a four-jointed palpus, first and second joints short and stout, nearly of equal length; the third clavate, longer than the second, fourth slender as long as the second.

Mentum triangular, broadest in front, supporting the ligula which is narrow at base, broadest at the middle and tapering into a point; palpi two-jointed, the basal joint short and stout, the second slender, slightly longer.

Prothorax twice as broad as long, broader than the head, narrower anteriorly, sides arcuate, the scute, covering the entire surface, with sinuate anterior and posterior impressed line connected at the sides.

*Meso-*and *Metathorax* similar, but shorter and broader, the scutes without the impressed lines, in mesothorax with an impressed puncture at each side, in metathorax with a small spine at each side.

Abdominal segments broadening to the fourth, then gradually narrowing to tip with a short tubular prolongation and two lateral appendages; the tergal scutes with four spines posteriorly, the spines becoming stouter and longer towards the penultimate segment.

The underside of the thoracic segments is strongly sinuate posteriorly, the prothorax with a hook at the middle, the abdominal segments 1–8 with a yellow depressed spot at middle, the ninth with a yellowish crescent-like broad scute multidentate posteriorly.

Stigmata nine, the first at the underside of prothorax beneath, and behind the legs, the following eight on the upperside of segments one to eight.

Legs, stout and short, with one long claw.

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A piece of meat was placed August 3rd in a box half filled with earth, together with ten specimens of Necrophorus velutinus; after ten days there were plently of larvæ about 5 mm. long, August 26th they were all in the ground, some pupated Sept. 12th.

Another lot, much smaller in size went into the ground August 15, pupated August 22.

All the larvæ were full of louse-like parasites, which seemingly did not much injury to the larvæ, but sucked out the pupæ all of which shrunk and died.

Of fifty larvæ I obtained not a single imago.

Probably in freedom the larvæ go deeper into the ground, and get there rid of the lice. Numerous larvæ raised in freedom could not be found after they had gone under ground in spite of very close researches

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NOTE.—One of our next numbers will contain a plate with illustrations to the above description.

TETRAGONODERUS, *Dej.*

Claws serrate.

Prosternum margined at tip. Elytra in great part piceous; legs and outer parts of antennæ piceous .... **1. intersectus.**

Prosternum not margined. Elytra usually more testaceous than piceous; legs and antennæ testaceous. .... **2. fasciatus.**

Claws simple.

Prosternum slightly protuberant, margined at tip. Elytra broadly oval, the dorsal punctures distinct, color testaceous feebly fasciate with piceous. Eyes rather large and prominent .... **3. latipennis.**

Prosternum obtuse, not margined at tip. Elytra slightly oblong, dorsal punctures indistinct. Eyes not prominent. Color entirely testaceous......... **4. pallidus.**

1. intersectus, Germ. Ins. Spec. Nov. p. 28.=*Lecontei*, Dej. Spec. IV. 499.—5–6mm. Ky. Ga. Fla.=*distigma*, Motsch. Bull. Mosc. 1864. III, 222.

2. fasciatus, Hald. Pro. Acad. Phil. 298. Lec. Ann. Lyc. IV, 197.=*undulatus*, Lec. New Spec. I, 6. —4–5 mm, N.Y. to Cal.

3. latipennis, Lec. Trans. Am. Ent. Soc. V, 44.—5–6 mm. Tex.

4. pallidus, Horn. " " " " 1868, 130.—5.5 mm. Cal.

NEMOTARSUS, *Lec.*

elegans, Lec. Trans. Am. Phil. Soc. X, 378.—5.5 mm. Ills. Md.

Resembles in ornamentation Lebia or Diãnchomena, but has the tibial spurs very long.

DROMIUS, *Bon.*

Entirely piceous. Thorax trapezoidal broader than long, rather widely margined. Elytra oblong nearly parallel. Palpi pubescent.................... **piceus,**

Pale yellowish testaceous, head black. Thorax longer than wide, very narrowly margined. Elytra elongate, gradually broader behind. Palpi not distinctly pubescent.................... **atriceps.**

piceus, Dej. Spec. V, 353.=*quadricollis*, Lec. Proc. Acad. Phil. 82. 8 mm. N.Y. Cal.

atriceps, Lec. Trans. Am. Ent. Soc. VIII, 163, 4 mm.—La., Ga.

AXINOPALPUS, *Lec.*

Color piceous, elytra with an oblique testaceous band, extending from the humeri to the middle of the elytra.................... **biplagiatus.**

Color yellowish testaceous, head usually piceous.................... **fusciceps.**

biplagiatus, Dej. Spec. I, 243.=*californicus*, Motch. Bull. Mosc. 1854, IV, 336. t. 5. f. 6.—3–4 mm. N. Y.-Cal.

fuscicepes, Lec. Ann. Lyc. V. 175.=*nigriceps*,—3.5 mm. Tex. Cal.

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‡Regarding the Synopsis of the genera we refer the reader to Dr. Horn's paper on the genera of Carabidæ etc. Trans. Am. Ent. Soc. IX, pp. 91–196.

The first species is distributed across the continent by the northern passage, the second extends from Texas to California following the line of distribution already indicated for so many species.

METABLETUS, *Schmidt.*

americanus, Dej. Spec. V, 361.=*borealis*, Zimm. Trans. Am. Ent. Soc. II, 243. 3–4mm. N. A.

APENES, *Lec.*

Head longitudinally sulcate, surface metallic .... **1. lucidula.**
Head punctured.
Elytra opaque very finely striate, the intervals flat; color black with paler humeral spot .... **2. opaca.**
Elytra shining, piceous, a pale humeral spot and a fascia near apex more or less incomplete, striæ moderately deep, intervals slightly convex .... **3. sinuata.**
Head finely strigose or wrinkled.
Thorax wrinkled. Color piceo-testaceous; striæ of elytra moderately impressed intervals slightly convex .... **4. nebulosa.**

1. lucidula, Dej. Spec. V, 320.=*angustata*, Schwarz. Proc. Am. Phil. Soc. XVII, 354 (merely a narrower race).—9–10 mm. N. Y. Fla.
2. opaca, Lec, Ann. Lyc. V, 175,—9 mm. Ga. Fla.
2. sinuata, Say. Trans. Am. Phil. II, 8.=*pustulata*, Dej. Spec. V, 316. 8 9 mm. N. Y.
4. nebulosa, Lec. Proc. Acad. Phil. XVIII, 364.—6.5 mm. Cal. Ariz.

PINACODERA, *Schaum.*

Hind angles of thorax not prominent, but rather obtuse.
Elytra with pale humeral spot and sides of elytra margined with testaceous. **1. limbata.**
Elytra piceous, with extremely narrow testaceous side-margin .... **2. platicollis.**
Hind angles of thorax distinct, slightly acute.
Margin of thorax broad, not wider at hind angles .... **3. punctigera.**
Margin of thorax very narrow, but wider at hind angles.
Elytral intervals convex at base only. Thorax distinctly wider than long. **4. semisulcata,** n. sp.
Elytral intervals convex in their entire length, the striæ rather deeply impressed. Thorax not wider than long .... **5. sulcipennis,** n. sp.

1. limbata, Dej. Spec. V, 320.—10 mm. N. Y.
2. platicollis, Say. Trans. Am. Phil. Soc. II, 14.=*complanata*, Dej. Spec. II, 448. =*russata*, Newm. Ent. 31.—10 mm. Tex. Fla.
3. punctigera, Lec. Ann. Lyc. V, 178.—10 mm. Tex.
4, semisulcata, Horn. n. sp. 11mm. Penins. Cal.
5. sulcipennis, Horn. n. sp. 10 mm. Penins. Cal.

The last two species are from the Peninsula of California and will be more fully described in a paper now preparing.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. IV. BROOKLYN, JAN. & FEB., 1882. Nos. 9. & 10.

Descriptions of New Species.

By Henry Ulke.

(Reprint from the Report upon Geographical and Geological Explorations and Surveys west of the 100th meridian, in charge of 1st Lieut. G. M. Wheeler etc., 1875. Vol. V, chapter XI, pp. 811–813.)

Bembidium nevadense.

Greenish-black, shining, subdepressed; upper and under surface brightly shining; thorax subquadrate, a little broader than long; sides rounded, margined, narrower at the base; hind angles rectangular, obliquely carinated, and at the base wrinkled; elytra finely striato-punctate. punctures diminishing toward the apex; interstitial lines depressed; at the humerus and before the apex dark rufous spots; antennæ deep piceous; basal joints rufous; legs dark brown. Length, .20 inch =5 mm. Nev. This species is allied to *B. lucidum*, *bimaculatum*, etc., but is more blackish, and a little smaller.

Dasytes ruficollis.

Body testaceous, shining and clothed with grayish pubescence; head and thorax reddish–yellow, finely punctured. clothed with cinereous pubescence, the latter rounded and wider than long; elytra dark-bronzed, with the sides and apex reddish-yellow, finely punctured and clothed with cinereous pubescence; abdomen dark-bronzed; prothorax and legs reddish-yellow; antennæ reddish-yellow, with the last five joints dark piceous. Length, .09 inch=2 mm. Nevada. This species is readily known from all others by its rufous head and thorax.

Epicauta Wheeleri.

Body black, covered with grayish pubescence; thorax rusty-red. Head sparsely punctured and covered with coarse, grayish pubescence; medial line black, shining; thorax rounded, as broad as long, covered with a thick, felt-like, reddish-brown pubescence, edged with lighter-colored, bristle-like hairs; elytra densely clothed with short cinereous pubescence; body beneath black, with coarse, gray pubescence; femora and tibiæ with a black spot at the end; tarsi and antennæ black. Length, 0.35–0.40 inch=9–11.5 mm. Arizona. I dedicate this beautiful species with great pleasure to Lieut. George M. Wheeler, Corps of Engineers, U. S. A., who, by the large collections made under his directions, has rendered important services to natural science.

Lytta lugubris.

Uniformly black, moderately shining. Head quadrate, scabrous, with large punctures, and a small, frontal, yellow spot; thorax hexagonal, and sculptured like the head; elytra evenly scabrous; body beneath more shining and uniformly punctured; legs and antennæ dark piceous. Lenght, 0.45–0.80 inch=11.5–20 mm. Owens Valley, California. Resembles *L. childii* and *mœrens*, but may be known at once by the angulated form and coarser sculpture of the head and thorax.

Crossidius intermedius.

Fulvous, flavo-pubescent. Head and thorax roughly punctured, blackish, thickly covered with yellowish hairs; thorax a little broader than long, with the sides angulated, pointed, and the hind angles prominent; elytra fulvous, densely clothed with flavous pubescence, deeply and closely punctured, the punctures becoming larger toward the base; abdomen flavous; antennæ and legs brown-red. Length, 0.45–0.65 inch =11–17 mm. Arizona. This species is closely allied to *C. suturalis*, which differs from it in having the head, thorax, feet, and antennæ black. Some of the females of our species have also a sutural vitta, which extends backward from the anterior third of the elytra, forming a very elongate oval spot like the one in *suturalis*.

CYMINDIS, *Latr.*

By Geo. H. Horn, M. D.

The species known in our fauna are not numerous but are with difficulty separable in tabular form. The following table will assist the student but must not be too strictly interpreted without reference to the descriptions.

Thorax widely margined, the margin more or less translucent.
  Interstitial spaces with confused punctures.
    Head and thorax similar in color to the elytra, the latter without distinct humeral and lateral paler spaces.
      Margin of thorax of moderate extent very little reflexed and scarcely translucent with many, usually three or more setigerous punctures..... **laticollis,** Say.
      Margin of thorax white, translucent, distinctly reflexed with one or two setigerous punctures.................................... **cribricollis,** Dej.
    Head and thorax usually paler than the elytra, the latter with distinct humeral spot and lateral margin paler, the surface in fully colored specimens somewhat metallic....................................... **planipennis,** Lec.
  Interstitial spaces with a single row of punctures................... **elegans,** Lec.
Thorax narrowly margined.
  Thorax distinctly broader than long, the margin wider than in the following species and with but one setigerous puncture at the side............ **unicolor,** Kirby.
  Thorax not wider than long, margin extremely narrow, sides with at least two setæ.
    Elytra rather flat, intervals densely and comparatively finely punctured and without lustre....................................... **americana,** Dej.
    Elytra normally convex, intervals not densely punctured, the punctures often coarse, surface shining.
      Thorax equally punctured, the median line feebly impressed.
        Thorax very coarsely punctured, the punctures sub-confluent at the sides, margin rare, with translucent edge.......................... **cribrata,** Say.
        Thorax normally not confluently punctured, sides with distinct but narrow translucent border.
          Surface conspicuously pubescent, elytra never with humeral pale space. **pilosa,** Lec.
          Surface not conspicuously pubescent, elytra with pale humeral space. **borealis,** Lec.
      Thorax unequally punctured, median line deeply impressed, elytral interval with one row of punctures................................ **neglecta,** Hald.

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cribricollis, Dej. Spec. V, 311. Chaud. l. c. p. 97.=*marginata*. Kirby. Faun. Bor. Am. IV, Ins. p. 13.=*reflexa*, Lec. Agass. Lake Sup. p. 203.=*abstrusa*, Lec. Proc. Ac. 1859. p. 82. N.Y. North. West. 10 mm.

planipennis, Lec. New Species. 1863. p. 6. =*cribricollis*‡, Lec. Ann. Lyc. IV. 186. =*brevipennis*, Zimm. Trans. Am. Ent. Soc. 1869. p. 243.=*marginata*‡, Chaud. l.c. p. 96. New Mex. Kans.—12 mm.
elegans, Lec. Ann. Lyc. IV, 186, N.Y.—11 mm.
unicolor, Kby. Faun. Bor. Am. IV, 14=*hudsonica*, Lec. New Spec. 1863, p. 6; Proc. Acad. 1873, p. 322. Lake Sup. Labrador—9 mm.
americana, Dej. Spec. II, 446. Chaud. l.c., p. 102.=*venator*, Dej. Spec. V, 311. Chd. l. c., p. 103. N. Y.—11 mm.
cribrata, Lec. Col. Kansas, 1859. p. 2. Nebr. Kans.—10 mm.
pilosa, Say. Trans. Am. Phil. Soc. II, 10.=*pubescens*, Dej. Spec. I, 215. N. Y.—10-11. mm.
borealis, Lec. New Spec. 1863, p. 7. North Red River, Nova Scotia.—9-10 mm.
neglecta, Hald., Proc. Acad. I, 298. N. Y. Pa.—8 mm.

APRISTUS, *Chaud.*

By Geo. H. Horn, M. D.

A genus composed of small black species, differing from all our Dromiide genera by the simple slender claws. The mentum is toothed, the ligula small, cordiform and quadri-setose in front, completely surrounded by its paraglossæ, the thorax is truncate at base.

The species occurring in our fauna are as follows:

Elytral striæ deeply impressed, those at the sides more feebly; thorax a little wider than long.
  Hind angles of thorax acute, slightly prominent, the lateral margin a little broader and more reflexed posteriorly; median line of thorax deep and reaching the basal margin; intervals of elytra rather strongly convex; surface color nearly always black .... **cordicollis**, Lec.
  Hind angles of thorax rectangular not prominent, the lateral margin not wider behind; median line fine usually not attaining the basal margin; intervals moderately convex, surface bronzed .... **subsulcatus**, Dej.
Elytral striæ feeble, those at the sides nearly obsolete; thorax about one fourth wider than long.
  Hind angles of thorax rectangular not prominent, margin not wider behind; median line deeply impresssed at middle and very faintly reaching the basal margin; color slightly bronzed .. .. **laticollis**, Lec.

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laticollis, Lec. Ann. Lyc. V, 176. Cal.—4 mm.

Description of Nycterophaeta Magdalena, n. sp.

By Geo. D. Hulst.

Expands 42 mm. (1¾ inches nearly); of uniform clear white, with a satiny luster above: primaries with a small black spot near the middle and another at the end of the discal cell, and three or four dots of the same color at the outer margin, terminating some of the veins. Hab. Black Hills. H. K. Morrison.

Col. Hulst, Græf, Tepper, Hy. Edwards and Neumoegen.

This beautiful insect I handed to my friend Mr. John B. Smith for generic determination, and was informed by him that it could not be properly placed in any of the existing genera: at my request he furnished the following description.

Nycterophaeta, n. gen. *J. B. Smith.*

Robust: eyes naked, with rather short but distinct lashes; ocelli present: clypeus with a bulging convex protuberence, varying somewhat in length in the specimens: ♂ antennæ simple: palpi closely applied to the front, and reaching to but not exceeding the vertex: Second joint heavy, with dense hairy clothing: terminal joint slender, cylindrical, truncate at tip: tongue long, strong, corneus: tibiæ spinulated; anterior rather short, flattened, broadening toward the tip where it is obliquely truncate and armed with three strong claws, of which the inner is longest: vestiture hairy, fine and long; on thorax somewhat bunched, but forming no decided tuft: abdomen untufted: primaries elongate, narrow, sub-lanceolate: secondaries moderate.

Closely allied to *Cucullia* in which it very much resembles superficially: sufficiently separated from this genus however by the formation of the clypeus, and the armature of the anterior tibia: it also lacks the peculiar elevated collar and tuftings of *Cucullia*: it agrees in many respects with *Cleophana* and should stand between that genus and *Cucullia*..

Revised edition of the Classification of Coleoptera.

Owing to the repeated demands for the Classification of the Coleoptera of North America the Smithsonian Institution has resolved to print a new edition, the old having been long since exhausted. As Drs. Leconte and Horn are now devoting all their leisure to the revision it is hoped they may not be too often interrupted by the demands of their correspondents for names of species, and that individual interest will yield to the general good.

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H. Ulke. Report upon the collections made in portions of Nevada, Utah, California, Colorado, New Mexico and Arizona. during the years 1871–74. (Descriptions of five new Species.)

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J. L. Leconte, M. D. The Coleoptera of the Alpine Regions of the Rocky Mts. (Descriptions of 41 new species, lists of Coleoptera etc., the North American species of Nebria etc.)

Same. 1879 Vol. V. No. 3. pp. 499–520.

J. L. Leconte, M. D. The Coleoptera of the Alpine Rocky Mountain Regions, Part II.

BULLETIN

OF THE

Brooklyn Entomological Society.

VOL. IV. BROOKLYN, MARCH & APRIL, 1882. Nos. 11 & 12.

A Synopsis of the North American Genera of the Noctuidae.

By John B. Smith.

Introductory Remarks.*

The Noctuidæ are as a rule robust, seldom slightly built moths, with comparatively small, stiff wings, which except in *Tortricodes bifidalis* are entire: the ocelli are nearly always present, and the wings have simple discal cells, two free veins at inner margin of secondaries, (counted as one by the German Entomologists) and one at inner margin of primaries: the latter usually have also an accessory cell at the upper angle of the discal, sometimes separated from it by a short stalk. The antennæ are bristle-form, generally simple in the female and pectinate or ciliate in the male.

The sexes are readily distinguished by an examination of the frenelum, a short spine-like process at the base of secondaries, beneath: in the ♂ this is simple, in the ♀ bifid.

In the Synopsis I have divided the group into three divisions, viz: A. with the eyes entirely naked, B. with the eyes naked but fringed above and below and sometimes at the sides with bristly or hairy lashes, and C. with the eyes entirely hairy; a single hair usually arising from each angle of the facets of the compound eye. These hairs are sometimes heavy enough to be seen by the unaided eye, but usually a lens magnifying from two to five diameters is required.

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* Owing to the limited space at my disposal, I am compelled here to omit everything not obsolutely necessary to explain the Synopsis: it will be published in pamphlet form when completed in the Bulletin, with an exhaustive Preface defining and limiting the group, giving the characters peculiar to it, and containing also an analysis of the structural points on which genera are founded and a review of the literature of the subject.

The divisions are divided into §§ according as the tibiæ are or are not spinulated, and sub-divided according to the armature of the anterior tibiæ, the modifications of the clypeus, and the form of the palpi.

These divisions are entirely artificial and the sequence of the genera in the synopsis is not that which is to be followed in the systematic arrangement of the group, the object being only to enable the collector to place any unknown Noctuid into its proper genus with but little trouble.

I have carefully compared the American, with allied genera of European Noctuidæ, and I have found it necessary to refer some of ours to European genera, while others were created on bases so fine as to be untenable and I have therefore rejected them. Wherever this has been done, I have given my reasons for doing it in a note.

Believing that structural differences alone should authorize genera, I have rejected all based on color merely, and all those founded on modifications of a modification of some structural character.

Many of the genera are based on a single species, often on a single specimen; it thus happened that I have been unable to make personal examination of all the genera but have been compelled to rely on descriptions, which were often very imperfect. Some genera were never described so far as I can ascertain but were created by a mere designation of the type; these genera where I have not seen the type I have of course been unable to place in the synopsis: I regard them as of no validity because never properly described but give a list of them at the end of the synopsis: other genera are so imperfectly described that it was impossible to place them and those also I add with their descriptions, such as they are.

I have to acknowledge my obligations to Messrs. Græf, Hulst, Tepper and Henry Edwards, for the loan of specimens not in my collection, and for suggestions, while engaged in my work; to Prof. F. G. Schaupp I owe thanks for a large number of European and American Noctuidæ.

A * before a genus name indicates that I have not seen it in nature: the numbers appended to others refer to the notes at the end of the synopsis.

Synopsis of the genera of the Noctuidae.

By John B. Smith.

DIVISION A. EYES NAKED.

I. TIBLÆ SPINULATED.

† ANTERIOR ARMED AT TIP.

A. Clypeus with a flattened, quadrate, corneus projection.

Anterior tibia very short, broad flattened; a long stout claw at inside, and three short strong claws at outer side; vestiture scaly. **Tricopis.**

Interior claw of anterior tibia disproportionately long, nearly equalling tibia: eyes reniform: head small, retracted: vestiture divergent. **Heliolonche.**

Anterior tibia long and slender: a claw at inner, and three spines at outer side of tip: vestiture hairy. ***Bessula.**

b. Clypeus without projection.

§ VESTITURE HAIRY.

† Anterior tibia slender, shorter than first tarsal joint.

Female ovipositor notably extruded: a stout claw at middle and a shorter at either side of tip of anterior tibia. **Copablepharon.**

Female ovipositor not extruded; anterior tibia with a claw at inner and a spine at outer side of tip: Head large, free; eyes globose. **Grotella,**

Head small, retracted; eyes reniform: tibia as before. **Melaporphyria.**

†† Anterior tibia longer than first tarsal joint.

——with a stout claw at inner, and a shorter at outer side of tip: primaries short and broad. **Derrima.**

——with a stout spine at either side of tip and sometimes a claw at middle: primaries elongate, narrow, outer margin slightly oblique. **Heliothis.**[1]

Much stouter: thorax very heavy, strongly convex; wings disproportionately short and narrow: tibia as before. **Chloridea.**

††† Anterior tibia short; broad at tip.

——with a stout claw at middle, a spine at inner, and a series of two to four spines to outer edge; head large. **Alaria.**[2]

——with a series of four strong claws, the second from inner edge longest; head small, retracted, vestiture divergent. **Heliophana.**

—— ——with inner claw single; primaries more widened outwardly ***Heliosea.**[2½]

§§ VESTITURE SCALY.

——with flattened hair intermixed; anterior tibia short, broad, almost fossorial; a long claw near, and a stout spine at inner edge, and two strong claws to outer side; tongue strong. **Tamila.**[3]

Tongue moderate; anterior tibia with three inner and two outer terminal and longer claws; before the first a short spine. ***Pippona.**

†† ANTERIOR TIBIA UNARMED AT TIP.

A. Palpi long; exceeding head by twice its length.

——slender, divergent, vestiture of terminal joint forming a club at tip. **Pleonectyptera.**

b. Palpi very short; not reaching front.

Head strongly retracted; thorax and abdomen tufted; the latter exceeding the secondaries. **Harrisimemna.**

c. Palpi porrect; reaching base of antennæ.

I. VESTITURE HAIRY.

§ Outer margin of primaries dentate.

Thorax with exaggerated posterior tufts; abdomen with smaller tufts. **Homoptera.**

Thorax and abdomen untufted, **Grammodes.**

§§ Outer margin of primaries entire.

Costal margin concave, apex acute; posterior tarsi of ♂ with long dense, appressed vertical hair on upper side; thorax untufted. **Remigia.**

Anterior tibia of ♂ with dense hairy clothing; thorax with low fore and hind tufts. ***Pteroscia.**

2. VESTITURE HAIRY, OVERLAID BY, OR INTERMIXED WITH FLATTENED SCALES.

§ Thorax with posterior tuft; abdomen more or less tufted.

Abdomen more or less cylindroconic, smoothly scaled, tufts hairy; wings ample, outer margin rounded, secondaries usually banded or entirely black. **Catocala.**[4]

Abdominal tufts small, scaly; primaries narrow, apex rectangular to middle of outer margin, which is there produced, thence excavated to hind angle: fringes dentate. **Hypsoropta.**

§§ Thorax and abdomen untufted.

Legs long, slender and closely scaled: thorax convex; abdomen slender; primaries broad, apex acute. **Phurys.**[5]

d. Palpi oblique or horizontal, exceeding the head by its own length.

1. VESTITURE HAIRY.

Thorax smoothly convex: wings ample, apex of primaries rectangular: outer margin rounded entire; abdomen untufted. **Harveya.**

——with a median crest; hair flattened, somewhat scale like; abdomen with loose tufts on basal segments: primaries with outer margin wavy, excavated beneath apex, broadly rounded at middle. **Celiptera.**

2. VESTITURE HAIRY, OVERLAID BY FLATTENED SCALES.

Thorax depressed, quadrate: abdomen untufted; wings large. **Spiloloma.**

e. Palpi stout usually reaching to or exceeding middle of front.

1. VESTITURE HAIRY.

Thorax usually convex, sometimes with a slight divided tuft; abdomen untufted; wings elongate with obtuse or rounded apex. **Agrotis.**

——with divided anterior and posterior tufts: abdomen tufted: wings comparatively broader than in *Agrotis.* **Cloantha.**[6]

Head retracted: thorax sometimes, with a saddle shaped posterior tuft: abdomen very stout, exceeding secondaries by ½ its length, with loose tufts on dorsum: wings small, primaries sub-lanceolate. **Arzama.**

2. VESTITURE OVERLAID BY FLATTENED SCALES.

Abdomen with dorsal tufts: primaries elongate, narrow, sub-equal, apex and outer margin rounded. **Laphygma.**

Abdomen untufted: primaries broad triangular. **Euclidia.**[7]

II. TIBLÆ NOT SPINULATED.

1. ANTERIOR WITH A CLAW AT TIP.

§ VESTITURE SCALY.

Clypeus with a narrow rim in front, from which rises a naked irregular roughened protuberance. ***Autoplaga.**

§ VESTITURE HAIRY.

† Clypeus with projection.

——cylindrical, with a cup-like depression, or quadrate with a like but narrow projection from the lower rim: head retracted; primaries broad triangular. **Xanthothrix.**[8]

Clypeus bulging, with a cup shaped depression, with or without a tubercle at bottom: vestiture flattened, loose, forming an upright ill defined basal tuft on thorax: ♀ ovipositor extruded; primaries triangular, costal margin convex, hind angle sometimes with a rudimentary tooth at hind angle. **Basilodes.**[9]

Clypeus with a cup-like depression, in which there is a wedge shaped horn; primaries with costal margin depressed. ***Fala.**[10]

†† Clypeus without projection.

——bulging: head small retracted: body stout, compact; vestiture long and divergent: wings small, rounded. **Adonisea.**[11]

——full: head larger, more free; armature of anterior tibia consisting of two terminal spines; ♀ ovipositor shortly salient and dependant: form moderate; wings ample, primaries elongate. **Lygranthœcia.**

2. ANTERIOR TIBIA UNARMED.

A. Clypeus with projection.

Projection consisting of a flattened, quadrate horizontal plate inferiorly: eyes small, uniform, palpi short; vestiture hairy. **·Axenus.**[12]

——— ——: vestiture scaly; primaries elongate, narrow, parallel. **Fruva.**

——— ——: primaries broad, short, triangular. **Metoponia.**

Projection bulging, convex: robust; with long hairy vestiture; abdomen short. **Aedophron.**

——— ——, with a double tubercle in front; palpi reaching base of antennæ; vestiture scaly. **Polenta.**

——— ——, with a diamond shaped depression: thorax tufted, vestiture divergent; wings large, broad. **Cirrhophanus.**

——narrow, bifid; vestiture hairy, smooth; abdomen considerably exceeding secondaries. **Nonagria.**

——conic, acute, tubercular; vestiture hairy with flattened scales intermixed; thorax and abdomen prominently tufted; the latter exceeding secondaries. **Achatodes.**

By Geo. H. Horn, M. D.

BLECHRUS, *Motsch.*

This genus is composed of a small number of black shining species differing from the allied genera either by the slightly lobed base of thorax, the mentum not toothed, or the claws serrate. The ligula proper is small and bi-setose at tip, the paraglossæ rather wide, and completly surrounding the ligula. In examining the illustrations of the mouth parts (Trans. Am. Ent. Soc. IX, pl. VIII, figs. 86, 87, 88, 89 and 90) it will be observed that *Blechrus* and *Axinopalpus* have the ligula bi-setose in front, *Apristus* and *Metabletus* quadri-setose, and *Dromius* sex-setose.

The species of *Blechrus* are separated by Dr. Horn as follows:

Thorax very distinctly wider than long, broadest about one third from apex.
  Elytra faintly sub-striate at middle.............................. **nigrinus,** Mann.
Thorax not wider than long, widest immediately behind the apex.
  Elytra almost smooth.
    Elytra longer than head and thorax, sides nearly parallel.......... **lucidus.** Lec.
    Elytra not longer, sides distinctly arcuate.......................... **pusio,** Lec.

B. nigrinus, Mann. (*Dromius*) Bull. Mosc. 1843. II, 184.=*angustus*,‖ Lec. (*Dromius*) Ann. Lyc. IV, 191.=*linearis*, Lec. (*Bomius*) Ann. Lyc. V, 177. N. Y. Wisc. 2.5 mm.

B. lucidus, Lec. (*Bomius*) Ann. Lyc. V, 177. Col.—2 mm.

B. pusio, Lec. New species 1863, p. 6. La.—1.8 mm.

TECNOPHILUS, *Chaud.*

The species here placed were formally considered to be Philotecnus =Cymindoidea. Chaudoir has corrected this.

The various forms occurring in our fauna seem to constitute one species with the following varieties.

var. *Pilatei*, Chaud. Head, thorax, antennæ and legs yellowish red, elytra blue.
var. *ruficollis*, Lec. As in *Pilatei* with the antennæ brownish, legs piceous.
var. *croceicollis*, Men. As in *ruficollis*, the head darker, becoming piceous.
var. ————. As in *croceicollis*, with the thorax becoming brown.
var. *nigricollis*, Lec. Head and thorax piceous.

T. croceicollis, Menet. (Callida) Bull. Ac. Petr. II, 1844. p. 51; *chloridipennis*, Motsch. Kæfer Russl. 1850, p. 39. note 3; *ruficollis*, Lec. Ann. Lyc. V, 1851. page 176; *nigricollis*, Lec., loc. cit; *Pilatei*, Chaud. Bull. Mosc. 1877. I, p. 239; *glabripennis*, Chaud. loc. cit. p. 242. note.
Cal. Or. Mont. Utah, Tex?—6–8 mm.

PHILOPHUCA, *Motsch.*

This genus contains those species in our fauna formerly placed in *Glycia*. It is very closely related to *Callida* and differs in having the fourth tarsal joint emarginate, not bilobed. An examination of the ligula does not show any reason why *Philophuga* should be remotely separated from *Callida*. In the dissections which I have made and figured (Trans. Am. Ent. Soc. IX, pl. VIII, figs. 93, 94 and 95) there will not be found any remarkable differences between these genera, and no reason is apparent why Chaudoir should not have included the present genus in his Callidides. It is however treated apart (Bull. Mosc. 1877, i. p. 243.) with no suggestion as to its position, being simply compared with *Tecnophilus*, with which it has far less in common than *Callida* or *Plochionus*.

The species at present known are as follows:

Body winged, elytra very little narrowed at base.
  Color blue or green.
    Elytral striæ fine, not impressed; head and thorax metallic green, elytra blue or violet. . . . . **viridicollis,** Lec.
    Elytral striæ deeply impressed on the disc, finer externally; body above entirely blue, or bluish green. . . . . **amœna,** Lec.
  Color castaneous. . . . . **castanea,** n.sp.
Body apterous, elytra narrowed at base.
  Color uniformly bluish or greenish. . . . . **viridis,** Dej.

P. viridicollis, Lec. (*Cymindis*) Ann. Lyc. IV, p. 188.=*purpurea*,‡ Chd. (nec Say.) Bull. Mosc, 1877, I, p. 245. Tex.—7-8 mm.

P. amœna, Lec. (*Cymindis*) Ann. Lyc. IV, p. 188.=*purpurea*,‡ Lec. (nec Say) loc. cit.=*Horni*, Chd. Bull. Mosc. 1877, I, p. 245. South West. St.—8.5 mm.

P. viridis, Dej. (*Cymindis*) Spec. V, p. 325; Chd. Bull. Mosc. 1877. I, p. 244.=*cyanea*, Motsch. Kaef. Russl. 1850, p. 36. n. 4; Bull. Mosc. 1859. III, p. 143 pl. 3. fig. 5. Cal.—7.5 mm.

P. castanea, Horn. n.sp. Cal.—9-10.5 mm.

In addition to the above list Chaudoir describes P. subcordata from Mexico which does not seem distinct from viridicollis, Lec.

EUCAERUS, *Lec.*

E. varicornis, Lec. Trans. Am. Phil. X, 387. Motsch. Bull. Mosc. 1864. III, p. 214. t. 1. f. 13. Ala. to La.—5 mm.

A small brown shining insect, whose systematic position is in doubt. It was first placed near the Harpali, then near Lachnophorus, and lately by Dr. Horn in the Lebiide series. It seems to be very rare.

CALLIDA, *Dej.*

The species of this genus are separated by Chaudoir into two genera, Callida and Spongoloba by characters of very feeble value; according to which C. decora belongs to the first, and C. punctata to the second genus. Dr. Horn leaves them in one genus and tabulates them as follows:

Upper side of tarsi flattened and more or less distinctly sulcate or impressed.
Body above uniformly colored.
Color piceous or castaneous, feebly striate.................. **platynoides.** n.sp.
Piceous, elytra with slight cupreous tinge.................. **planulata.** Lec.
Bright blue or green.................................... **viridipennis.** Say.
Body above bicolored; thorax red, elytra blue or green............. **decora.** Fab.
Upper side of tarsi convex, not sulcate nor impressed.
Body above bicolored: thorax red, elytra blue or green........... **punctata.** Lec.
Body bright blue or green.
Elytra distinctly longer than the head and thorax, their surface moderately striate with slightly convex intervals................................ **fulgida.** Dej.
Elytra not longer than the head and thorax, their surface very finely striate with flat intervals...................................... **purpurea.** Say.

C. platynoides, Horn. n. sp. -- Cal. Utah.--10.4-12.5 mm.

C. planulata, Lec. Proc. Ac. 1858, p. 59. Texas?—11 mm.

C. viridipennis, Say. (*Cymindis*) Trans. Am. Phil. Soc. 1823. Vol, II, p. 9; Lec. Ann. Lyc. IV, 189. Chaud. Ann. Belg. 1872. p. 117.=*marginata*, Dej. Spec. I, 222.

C. decora, Fab. (*Carabus*) Syst. El. I, 181; Dej. Spec. I, 225. Icon. Col. ed. IV. II, pl. 7, fig. 7. Chevr. Col. Mex. fasc. II, n. 36.=*cordicollis*, Putz. Mem. Liege. II. 373,=*cyanoptera*, Lec. Proc. Ac. 1858, p. 59. Gulf States and Mex.—7-8.5 mm.

C. punctata, Lec. Ann. Lyc. IV, 189. Chaud. (*Spongoloba*) Ann. Belg. 1872, p. 152. N. Y., Mich., Ohio., La., Ks.—7-7.5 mm.

C. fulgida, Dej. Spec. V, 330., Chaud. (*Spongoloba*) loc. cit. Ga. Fla. Tex. 8-10 mm.

C. purpurea, Say. (*Cymindis*) Trans. Am. Phil. Soc. 1823, p. 10.=*smaragdina*, Dej. Spec. I, 225. Chaud. (*Spongoloba*) loc. cit.=*cyanipennis*, Chaud. Bull. Mosc. 1844. p. 467. N. Y. Mich. Ga. Mo. Ks. Nebr.—7.5-9 mm.

EUPROCTUS, *Sol.*

E. trivittatus, Lec. (Onota trivittata) Proc. Am. Phil. Soc. XVII, 373.

Mandibles with distinct scrobes; mentum not toothed, fourth tarsal joint bilobed; ungues serrate. Bright rufo-testaceous; elytra with striæ of fine punctures, ornamented with a sutural and lateral black stripe meeting at the truncated apex.—Fla. 5 mm.

ONOTA, *Chaud.*

O. floridana, Horn. Trans. Am. Ent. Soc. IX. 159.

Mandibles without scrobes: mentum not toothed; ungues pectinate; fourth tarsal joint bilobed. Rufo-testaceous; elytra brilliant green with extremely narrow lateral and apical rufous border, and moderately deeply striate, the striæ finely punctured, the intervals smooth.—Fla. 5-6.25 mm.

Description of the larva of Patrobus longicornis.

By F. G. Schaupp.

Form elongate, broadest in front, narrowing posteriorly.

Color. Head and thorax rufous, brownish, abdominal scutes black, legs, antennæ and underside pale.

Head large, longer than wide, as broad as prothorax, hexagonal, above convex; anterior angles rounded, posterior angles prominent. Sides hairy, subsinuate near the eyes and before the base.

Eyes large, six on each side, situated at a little distance from the base of the antennæ, prominent at the middle of the anterior sinuation of the head.

Antennæ four-jointed; first joint sub-cylindrical, as long as the slightly club-shaped second joint; third shorter, very much thickened at tip, supporting the slender fourth joint of equal length and also at the outside a short process; the first joint has but one bristle, the second is glabrous and the third and fourth are set with three bristles. Near the tip of the third joint there is a stout thorn and a longer process projecting outwards.

Mandibles long, arcuate, with one stout tooth behind the middle.

Maxillæ very long, basal joint very short, second or cardinal piece long, subcylindrical, slightly thicker towards apex, thickly set with bristles at the inside and supporting a four-jointed palpus and two-jointed lobe. First joint of palpus stout, short, second twice as long, but much thinner, third and fourth as long as second, slender, the third a little stouter than the fourth. The first joint of lobe longer than the first joint of palpus, but slender, the second of same length, but even more slender.

Mentum transverse trapezoidal, broader than long. Ligula narrow at base, broadening toward apex, densely set with bristles, with a terminal obtuse prolongation at middle: palpi two-jointed, the first longer and stouter than the second.

Prothorax longer than broad, angles obtuse; as broad as the head, but longer, the sides sub-parallel.

Mesothorax sub-quadrate, slightly arcuate at tip.

Metathorax similar to Mesothorax.

Abdomen, first segment shorter than the following which are nearly of equal length gradually becomming narrower and more elongate, the ninth small and cylindrical with a tubular prolongation and the anal fork set with bristles.

The sides of the thoracic and the abdominal segment are set with bunches of bristles; the former with two bunches, the other with one.

Spiracles nine at each side, as in other Carabidæ, the first above the middle feet.

Rearing of a Hybrid Moth.

By Geo. D. Hulst.

Om May 21st 1880, I had a Samia Cecropia ♂ mate with S. Ceanothi ♀. The female deposited eggs May 22nd which resembled ordinary Ceanothi eggs, and from these, very hot weather intervening, the larvæ emerged May 31st.

I gave the larvæ the choice of 6 species food-plant, but they would for 12 hours eat nothing. I left them at night with wild cherry only, which I found next morning they had begun to eat. The first moult was passed June 6th, the second June 12th. the third June 17th, the fourth June 24th. All their history through, they were intermediate in appearance between the larvæ of Cecropia and Ceanothi; a few however verging in appearance toward the ♂, and a few towards the ♀ parent. The great bulk however seemed to be as nearly intermediate as possible, and of course were very easily distinguishable from either. As compared with Cecropia, the sub-dorsal tubercles on the third and fourth segments were light orange in color, and more slender. Those on the fifth segment were much larger; also light orange. The rest of the sub-dorsal were light lemon yellow. The lateral tubercles were linear, light blue at base, shading off to pale white at ends. Spiracles light blue, oval edged with black. Body green, lighter above; more cylindrical than Cecropia. When full grown the larvæ measured from 3½ to 4 inches in length.

They began making cocoon July 1st. The cocoons were intermediate between the two species; not so baggy so long, or so brown as in Cecropia, and fuller, longer, and less silver-gray than Ceanothi.

The cocoons were kept during the winter in an open, fireless garret. The weather was exceedingly cold, and without doubt in the garret fell to zero.

The first imago appeared May 15th. The first 19 imagines were males. Those emerging towards the last were all females. Eighteen cocoons remain from which the imagines have not come but which seem to containing living pupæ.

The imagines are intermediate between the two species and as a whole, are remarkably constant in color. The bodies of the females are small, and the wings have a filmy appearance as being very thinly scaled.

A ♀ I mated with a Hybrid ♂; also two with Cecropia ♂, and one with Ceanothi ♂. The pairs in each case remained in coitu all day. The ♀ mated with Hybrid male, laid one egg only. The two mated with Cecropia laid 14 eggs only. The one mated with Ceanothi laid two eggs only. I made an examination of the bodies of the females afterwards and found an average only 4 eggs left unlaid. From all the eggs only one larva emerged, and that from one of those laid by the female mated with Cecropia. None of the others showed any signs of life. The larva was very nearly dead when I found it and must have been very much lacking in vitality.

The result shows that the Hybrid was very nearly sterile. Five females examined had an average of only 8 eggs each developed. And those laid were seemingly almost infertile.

A VARIETY OF ARCTIA VIRGO.

My friend, Mr. F. G. Schaupp, took, in Sullivan Co., N.Y., several specimens of Arctia virgo, Abb. & Sm., differing from the normal form by having the abdomen and secondaries of bright yellow orange instead of the usual red.

Although Mr. Schaupp took single specimens (all, I believe ♀♀) in several seasons, this form is very rare.

Were I not against describing varieties I should certainly name this, if only for the purpose of calling the attention of collectors to its existence. No doubt it is occasionally to be met with where A. virgo is common.

Edw. L. Graef.

Naming Varieties at Wholesale.

To what an extent the recent tendency of naming more or less distinct varieties leads, is shown by an article in Dr. Katter's Entomol. Nachrichten Vol. VIII, p. 17: "38 new varieties of Coccinellidæ" by Adolf Walter.

This gentleman enumerates twenty-five varieties of *Halyzia conglobata*, Lin., fifteen of which are new, based on the number or position of the elytral spots; also nine new varieties of *Adonia variegata*, Goetze!! etc.

I have about a dozen of such varieties of our *Cryptocephalus venustus*, Suffrian, which I am tempted to baptize giving them the names of the gentlemen who indulge in such a sport. F. G. Schaupp.

Description of Leptinotarsa Behrensi.

By E. V. Harold.

(Reprint from Mittheil. des Muenchener Entom. Vereins. 1877. p. 16.)

L. Behrensi. *Oblonga, convexa, obscure viridænea vel nigro-ænea interdum nigroviolacea, thorace punctis majoribus et minutis sat dense adsperso; elytris dense, latera versus confuse, apicem rugulose punctatis, punctis disco irregulariter triseriatis. Long.* 15–18 *mm.*

Oval, strongly convex; quite shining, lighter or darker æneous, usually dark greenish or bluish. Thorax, with very fine and some coarser punctures, the punctuation at the sides more distinct; rounded at apex, the anterior angles forming a small but sharp little tooth. Elytra densely punctured, at apex and sides irregularly and diagonally wrinkled, on the disc in irregular rows, each three of such rows more approximate, so that smooth, and sometimes even slightly convex, intervals appear between these punctured lines. But in some specimens these rows are scarcely descernible. Epipleuræ flat, almost without punctuation, the interior margin often rufous, pellucid. Habitat California.

Of this stately species, which in size surpasses *lacerata* and *cacica* Mr. Behrens sent several specimens to C. A. Dohrn. It differs from all species known at present by the concolorous densely punctured elytra.

Description of Lactica specularis.

By E. V. Harold.

(Reprint from Harold Col. Hefte 1865. XIII. 89.)

Diphaulaca specularis. Nitida, rufo-testacea, elytris purpureoviolaceis; capite thoraceque lævibus, hoc transverso, angulis anticis obtuse rotundatis, sulco basali minus profundo utrinque angulatim in marginem baseos deflexo; elytris lævibus, pone scutellum distincte transverse impressis; pectore, abdomine femoribusque posticis piceis, pedibus 4 anticis rufo-testaceis, tibiis tarsisque posticis piceo- rufis, antennis nigris, articulis 3 basalibus rufo-testacei.. Long. 4 mill. Florida.

Description of Ataenius sculptilis.

By E. V. Harold.

(Reprint from Harold Col. Hefte. III. 86. 1868.)

Atænius sculptilis. Leviter convexus, subelongatus, parum nitidus, piceus, capite æqualiter dense punctulato, clypeo untrinque obtuse subdentato; thorace dense ac fortiter punctato; elytris catenulato-striatis, interstitiis medio carinatis et utrinque interum tenuiter costatis, costulis hisce a punctis striarum interruptis; tibiis posticis margine apicali denticulato, femoribus marginatis; similis *A. hispido* at nudus clypeoque non rotundato differens. Long 2⅓ lin. Venezuela. [Tex.]

Description of Ataenius figurator.

By E. V. Harold.

(Reprint from Harold Col. Hefte. XII, 24.)

A. figurator, (n. sp.) Elongatulus, nitidus, piceus; capite margine postico punctulato, antice transversim leviter rugosulo; thorace irregulariter vage sat fortiter punctato, punctis basi et ad angulos posticos adhuc rarioribus; elytris punctato-striatis, interstitiis planis, lævibus. Simillimus omnino A. Haroldi, at minor, angulis clypei obtusius rotundatis sicut et thorace fortius punctato dignoscendus. Long. 4 mm La.

Description of Lactica xanthochroa.

By E. V. Harold.

(Reprint from Harold Col. Hefte XIII, 89.)

Lactica xanthochroa. Nitida, oblongo-ovata, ochracea, antennis, articulis duobus basalibus exceptis, femorum apice, tibiis tarsisque fuscis; fronte inter antennas non acute carinata, convexa, parte convexa antice dilata; thorace lævi, angulis anticis oblique truncatis, elytris sat dense, at subtilissime et apicem versus adhuc obsoletius punctulatis. Affinis *L. tibiali* Oliv., at major, elytris punctatis sicut et antennarum articulis duobus basalibus testaceis optime distinquenda. Long. 4 mill. Fla.

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